



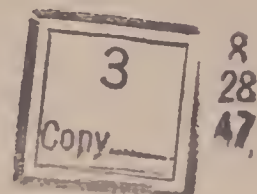


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FOREIGN ECONOMIC ADMINISTRATION
Enemy Branch

JAPANESE FISHING INDUSTRY

Special attention is called to the fact that this document was substantially completed prior to the surrender of Japan. Persons using this document are cautioned that its recommendations were written prior to the acceptance of the Potsdam Declaration and the Instrument of Surrender. All recommendations must, accordingly, be critically examined in the light of current U.S. policy.

September 1945

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U.S. FOREIGN ECONOMIC ADMINISTRATION
Enemy Branch

JAPANESE FISHING INDUSTRY

September 1945

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FOREWORD

Part I of this report contains a brief overall survey of the Japanese prewar fishing industry, a summary of the wartime conditions and the administration and organization of the industry, and recommendations pertinent to Military Government administration. Part II provides the background material basic to a full understanding of Japanese fishing operations and the detailed planning of actual administration. Most of this part discusses the prewar industry, but the last section pulls together all the available information concerning wartime conditions.

Most of the data presented were taken from official and semi-official Japanese sources. Not only were errors and inconsistencies frequently detected within individual volumes, but many data from different sources, supposedly reporting on the same subject, are irreconcilable. In view of this it should be recognized that many errors are known to occur in the report, but it is believed that the general picture presented and most of the details are accurate.

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Part I

SUMMARY AND RECOMMENDATIONS

I GENERAL SURVEY OF THE INDUSTRY

The fishing industry in prewar years occupied an important position among Japan's enterprises, being on the one hand, an indispensable source of food and on the other, a vital factor in the nation's international accounts by furnishing a major item in the export trade. In addition, the fisheries were of importance to agriculture in providing fertilizer materials and poultry feed, and to industry in providing oils (for soap, glycerine and a host of other products) and various chemicals.

The total amount of marine products from operations based on Japan proper in pre-war years exceeded that of any other country and accounted for about 20-25 percent of the world's total. 1/ The annual production of fish, shellfish, crustaceans and molluscs averaged more than 3.4 million metric tons (Table 1) -- a production approximately equal to that of the twenty-one European countries (including England and Norway) or about three times the total United States production. 2/ In addition seaweed was taken in large quantities (about 450,000 metric tons annually) and whales and seals and pearl and pearl shell constituted other valuable catches.

Engaged in the fishing industries were almost $1\frac{1}{2}$ million Japanese -- estimated at 50 percent of the world's total. According to one estimate 20 percent of the population of Japan was engaged in or was directly or indirectly supported by fishing activities, a larger percentage than in

1/ Including all Japanese Empire areas the percentage was about 30-40 percent in the immediate prewar years.

2/ Including all Japanese Empire areas the total production was almost 5 million tons.

TABLE 1

Total "Fish" Catch of Japan Proper, 1934 - 1940 ^{a/}
(1000 metric tons)

	<u>1934</u>	<u>1935</u>	<u>1936</u>	<u>1937</u>	<u>1938</u>	<u>1939</u>	<u>1940</u>
<u>Coastal Catch</u>							
Fish	2,227	1,929	2,143	1,854	1,685	1,745	1,511
Shellfish	180	205	152	141	117	113	176
Crustaceans and Molluscs	<u>190</u>	<u>136</u>	<u>158</u>	<u>153</u>	<u>212</u>	<u>228</u>	<u>227</u>
Total	2,597	2,270	2,453	2,148	2,014	2,086	1,914
<u>"Deep Sea" Catch</u> ^{b/}							
Home waters	727	815	975	862	788	785	793
Korean waters	65	110	48	36	24	18	n.a.
Formosan waters	-	-	-	1	-	2	n.a.
Kwantung waters	4	6	8	5	5	4	3
South Sea Mandated area	n.a.	n.a.	2	4	4	3	n.a.
Soviet waters ^{c/}	108	75	86	83	72	77	n.a.
Trawling	<u>52</u>	<u>53</u>	<u>52</u>	<u>50</u>	<u>38</u>	<u>36</u>	<u>34</u>
Total	956	1,059	1,171	1,041	931	925	n.a.
<u>Aquiculture</u> ^{d/}	100	122	121	137	116	n.a.	n.a.
Grand Total	3,653	3,451	3,745	3,326	3,061	n.a. ^{e/}	n.a. ^{e/}

n.a. - not available

^{a/} These figures represent the total production of fish, shellfish, crustaceans and molluscs, i.e. the total "fish" catch which could be used as food. Seaweed, whales and seals are excluded as is the production of Karafuto waters and floating canneries for which catch data are not available. The figures indicated as not available are insignificant except those for 1940. The totals are made from all available official figures. Not only do the total figures represent production, but are thought to almost approximate domestic consumption. Although Japan had sizable fishing exports in prewar years these are thought to be offset here by the omission of the production of floating canneries, the crab production of Soviet waters and the fish imports from colonial areas (chiefly Korea). Although exports loom large in Japan's trade by value the actual volume is small as compared to the total catch. Domestic consumption during the immediate prewar years appears to have been about 3 million metric tons.

^{b/} Includes only the catch in these waters from operations based on Japan proper. In the fisheries of the Russian waters there are land bases on Soviet territory, but the boats sail each season from Japan. The fisheries listed here are often called the "pelagic" or "deep sea" fisheries of Japan although many of the operations are not deep sea fishing.

^{c/} Does not include crab production.

^{d/} Excluding amanori (seaweed), goldfish, pearl oyster, pearl shell and "other".

^{e/} Estimated at 3,130 for 1939 and 2,950 for 1940.

any other nation. These fishermen used more than 360,000 boats, or 45 percent of the world's total number of fishing boats.

The annual per capita consumption of fish for food in prewar years was more than 60 pounds, higher than in any other country. Lacking a significant livestock rearing industry Japan's population depended upon the fisheries to furnish almost all of their animal protein. Rice and fish with some green vegetables and fruit formed the staple diet of the population. Marine plants were also an important food item.

As the statistics cited above indicate, aquatic industries occupied a position of far greater importance in Japan than in most countries where fishing is looked upon as the poor relation of other much more important industries and is overshadowed by them.

Japanese fishing was largely concentrated in the coastal waters of Japan proper and the Pacific waters east of Japan, but operations were also carried on in the Yellow Sea, the China Sea, along the coasts of Korea (Chosen) and Karafuto (Japanese Sakhalin) and around the margins of the Okhotsk Sea. Of lesser importance were fisheries of tropical waters, Bering Sea and the Antarctic whaling region.

Much of the fishing industry, particularly that of the "deep sea", was modern large-scale business in which control was centralized in a relatively few corporations. The coastal fisheries, however, were largely operated by very small units; four-fifths of the fleet in 1938 was still composed of small craft less than 5 tons propelled by oars, sails or small motors and operating close to shore.

Some of the processing was likewise in the hands of large companies and closely coordinated with the fishing activities. This was especially true of the companies producing chiefly for the export markets such as those operating in the northern fisheries. The drying and salting of fish for home markets although done partly by the large-scale operators was also carried on in many small units.

The Japanese government has been active in the fishing industry -- in research, in training and in regulating the operations as well as in furthering the rapid and vigorous expansion of fishing into more distant seas. Government control permeates all parts of the industry and has been tightened during the war period.

Japan's widespread fishing operations have encountered controversies with other nations -- with the Soviet Union in its Northern fisheries, with the United States in its expansion of salmon fishing and with several nations regarding fur seal and whaling operations.

Although this guide deals with all aspects of the fisheries, either in or based upon Japan proper, emphasis is pointed toward the role of the industry in supplying food for domestic consumption. This was the primary importance of the industry in prewar years, although often overlooked by Westerners who were concerned with the Japanese export trade. Likewise the core of the fishery problems confronting military government authorities will be supplying food for the Japanese population.

II WARTIME CONDITIONS OF THE INDUSTRY

Decline in Production and Supply

During the war period the fishing industry has suffered seriously and this has, in turn, affected the food supply of the Japanese people. It has been estimated that the 1943-44 fish production was 2,360,000 metric tons and that of 1944-45 about 1,650,000 tons. In recent months the production has been drastically curtailed by naval operations close to the home islands.

The reduction in supply available for domestic consumption from about 3,000,000 tons in prewar years to 1,650,000 tons in 1944-45 can be expected to have seriously affected the Japanese diet, reducing annual per capita consumption from more than 60 pounds to about 40 pounds. This loss in a major protein food is important although it has been partly mitigated by increased soybean imports.

The decline in production has been due largely to developing shortages of boats, manpower and equipment, but has also been related to the government pricing of food fish. Many fishing vessels were commandeered by the armed forces, others were taken for transport purposes in the coastal trade and the inter-Empire trade, and some of the smaller boats were used for landing operations in China. The conscription of large numbers of fishermen, the removal of others from the industry for the operation of commercial boats and the transfer of some to more lucrative war industries resulted in a manpower shortage. Boats using Diesel oil or gasoline have had their operations restricted because of fuel shortages; rationing of

fuel for fishing boats began as early as August 1941. Shortages of nets, boat repair parts and other equipment were reported in 1941 and became widespread after 1943.

At first the outlying fisheries -- Northern waters, trawling and deep sea in "home waters" -- were most affected by these shortages, but the production of coastal fishermen also declined despite attempts to keep their production as high as possible. Output of the coastal fisheries was noticeably reduced in many areas by late 1943 because of these war-time shortages. In addition to these shortages there has been dissatisfaction among coastal fishermen with the prices established by the government and in recent months fear of destruction by Allied naval operations further curtailed fishing. Aquaculture production, although encouraged throughout the war period, is thought to have increased little, if at all, due to manpower shortages.

Wartime Distribution

In late 1941 fish was first rationed locally in those areas of Japan where supplies were short and irregular and in early 1942 the Food Control Bill provided partial control of marine foods. This bill, designed to strengthen government control of food, established a control structure national in scope and under the general supervision of the Bureau of Food Control of the Ministry of Agriculture and Commerce. 3/

3/ In the Cabinet reorganization of November 1943 the Ministry of Agriculture and Forestry and the Ministry of Commerce and Industry were combined to form the Ministry of Agriculture and Commerce. The new name is used in this section.

The actual control of the distribution of marine products was by control associations designated by prefectural governments. Under the controls established at this time emphasis was placed on seven consumption regions -- the six large cities -- Tokyo, Osaka, Yokohama, Kyoto, Kobe and Nagoya -- and Northern Kyushu. Elsewhere counties (guns) were designated as consuming areas. At this time salted and dried fish were mentioned as the most important items under control. Later eleven "designated consuming cities" for fresh fish and vegetables were named -- Tokyo, Yokohama, Nagoya, Kyoto, Osaka, Kobe, Hiroshima, Kure, Shimonoseki, Northern Kyushu and Sasebo. For these areas the Central Agricultural Association (Chuo Nogyo Kai) made shipping plans and monthly quotas and these, approved by the Ministry of Agriculture and Commerce, were sent to local associations. After August 1944, however, the Ministry of Agriculture and Commerce directly notified local governments of amounts needed and its shipping plans, making the local government authorities responsible for shipping the needed quantities of fresh fish.

Since much of the rationing control of fish during the war period has been local rather than nationwide, the per capita allowance is thought to have varied considerably within Japan and since transportation and distribution have been impaired some areas can be expected to have sufficient supplies whereas other areas, particularly the large cities, have suffered severe shortages. In Tokyo, for example, shortages were common in late 1943 and at times distribution is known to have been limited to two days or even one day per week.

Despite the control of food distribution illegal operations are widespread and many people who have the means supplement their rations through black market purchases. Fish is known to enter into the black market in considerable amounts.

Wartime Price Controls

A cabinet ordinance in August 1940 provided for price control for perishable foods, including fish and shellfish. Wholesale prices are fixed by prefectural governments with the advice of a price fixing committee, the whole system being administered by the Ministry of Agriculture and Commerce. Details of fish prices during the war are not available, but when prices were first set they were reduced below the free market price prevailing at the time. Up to April 1943 only minor upward revisions had been made. Fishermen's complaints that the government prices were too low prevailed and were one factor in both the reduced supply and in the large black market sales. In August 1944 the prices of fresh and salted fish were reported to have been revised upwards by more than 20 percent.

III ADMINISTRATION, CONTROL AND ORGANIZATION OF THE INDUSTRY 4/

Pre-War Period

Government Administration and Control. The Imperial government administered the fishing industries of the coastal waters, the high seas and the interior waters through the Fisheries Bureau (Suisan Kyoku), one of six bureaus of the Ministry of Agriculture and Forestry (Norinsho). This bureau regulated and licensed certain fisheries such as trawling, whaling, factory ship operations and fur sealing. It supervised and aided the fishery associations and societies; it was active in fishery research, in conservation measures and in education. The compilation and publication of national fishery statistics was also carried on by this central bureau.

Even prior to the war there was hardly any phase of the fishing industry which was not subject to control, either direct or indirect by the Imperial government. In addition to the direct regulation of certain fisheries as mentioned above, the government exercised control through the central associations of the various fishery organizations. These central associations included associations to which companies dealing with certain phases of the industry were forced to belong as well as the central associations of fishing societies and cooperatives. In order to further centralize its control the government also sponsored, in the immediate prewar period, the amalgamation of many small fishing companies to form large corporations.

4/ See pages 166-184 for further details, for prewar period and pages 198-209 for war period.

The prefectural governments, most of which maintained separate fisheries sections, regulated the local licensing and supervised the local organizations. Thus, they had direct control over those village fishermen who fished the coastal waters. In many cases, the prefectural governments also engaged in research and educational activities.

Organization. All aspects of the Japanese fishing and related industries were highly organized. In general the organizations may be divided into three types: (1) societies, of which there were several kinds; (2) companies; and (3) associations.

Societies. Fishery societies (suisan-kai), aquatic products societies (suisan-kumiai) and fishermen's societies (gyogyo-kumiai) were three types of societies for fishermen and those interested in the industry. These were all set up under law and the central government which gave them aid also had considerable control over them. Some of these societies were principally aimed at promoting the common interests of those engaged in production, manufacture and sale of aquatic products whereas others were mainly concerned with economic aspects of individual members. In the coastal fisheries the fishermen's societies (gyogyo kumiai) were perhaps the most important type of organization; these originally formed to handle the "fishing rights" of the villages, in many cases also undertook cooperative marketing, purchasing and credit arrangements.

Companies. Although there were several hundred fishing companies in 1939, two large fishing companies, both of which were the

result of government sponsored mergers, dominated the large scale commercial deep sea fisheries in the immediate prewar years: the Nippon Suisan Kabushiki Kaisha (Japan Marine Products Company) and the Nichiro Gyogyo Kabushiki Kaisha (Nichiro Fishing Company).

The Nippon Suisan was capitalized at 93 million yen. It not only operated all the floating crab canneries in the northern seas but controlled three-fourths of the steam trawler industry, most of the Antarctic and local whaling and 20 percent of the exports of marine products.

The Nichiro Company, capitalized at 87 million yen, controlled virtually all the salmon fishing in Soviet waters and through its various subsidiaries controlled most of the rest of the salmon fishing industry as well as cod fishing and the shore-based crab fishing.

Not only fishing but a large part of the processing, particularly the canning of marine products, was carried on by these two companies or their subsidiaries.

The Mitsubishi Shoji K. K. (Mitsubishi Trading Company) was the leading firm in exports.

At the top of the fishery companies one can distinguish among others the well-known family firms of Mitsui and Mitsubishi. The Manchurian Heavy Industries Development Corporation is the principal shareholder of Nippon Suisan K. K.

Associations. All aspects of the industry -- fishing, processing and marketing -- were coordinated into associations. The fishery organizations were coordinated through the Dai Nippon Suisankai (the Fisheries Societies of Japan), the Teikoku Suisankai (Imperial Fishery

Society or the National Association of Fisheries) and the Central Association for Fishermen's Cooperative Societies. The companies engaged in manufacturing, particularly those producing for the export market, were united into such associations as the Canned Food Association of Japan, Canned Crab Packers and Manufacturers' Association, the Fish Meal Producers and Exporters Association, etc.

These associations, government-sponsored and operating under a Fisheries Association Law promulgated in 1921, provided one more point where the government exercised control.

Wartime Reorganization of the Industry

All phases of the fishing industry were subject to government control prior to the war but since 1942 several reorganizations have brought much closer control.

In late 1942 and early 1943 the deep sea fishing industry was reorganized so that there is only one big enterprise operating in these fisheries -- the Imperial Fishing Control Company (Teikoku Suisan Tosei Kaisha). This company, formed with a capital raised by the leading fishing companies, lets out boats and gear to the four branch companies, operates cold storage plants and grants necessary credits to the branch companies -- the Northern Pacific Fishing Control Company, the Japan-Soviet Fishing Control Company, the Japanese Pelagic Fishing Company and the Western Pacific Control Company. The present relation of these branch companies, which were formed by the merger and realignment of the large existing companies, to such parent companies as Mitsui and Mitsubishi is not clear. (For earlier relationships of the prewar companies see pages 10-11.)

Although coastal fishing, drag net fishing by small boats, and tuna and bonito fishing did not come under this reorganization, in 1943 these were all to be reorganized with coastal fishing to be placed under "a central fishing federation". ^{5/} Thus, by these reorganizations fish production was brought under centralized control. Distribution and prices, as already indicated, were also controlled.

During the war changes in the administrative organization of the government affecting fisheries or the distribution of marine products in one way or another were numerous but full details are not available. In October and November 1943 the Ministry of Agriculture and Forestry merged with the Ministry of Commerce and Industry to form a Ministry of Agriculture and Commerce (Noshosho). In this reshuffle the Fisheries Bureau seems to have been taken over intact by the new Ministry. New wartime bureaus, established under the Ministry of Agriculture and Commerce, however, have simultaneously or successively dealt with some phase of fish production, distribution and pricing. Included in these are the Bureau of Food Control, the Commodity Price Bureau (Bukka Kyoku), the Livelihood Commodity Bureau, and the Resources Bureau (Shizai Kyoku).

^{5/} Although no further definite statement concerning this reorganization is available there are indications that it took place.

IV SUGGESTIONS FOR MILITARY GOVERNMENT ADMINISTRATION

Overall Recommendations

Policy principles for the Japanese fisheries during the period of military government are: 6/

1. Japan should produce such fishery products as are required for domestic consumption.
2. The military government should assist in reestablishing production facilities to the fishing and processing industries and facilities for the distribution of fishery products in order to meet domestic consumption requirements.
3. Fishery production for export should be undertaken only if facilities, equipment, gear and manpower available are needed less urgently to meet domestic consumption requirements than for products to (a) supply United Nations with animal proteins and oil or (b) secure foreign exchange for essential imports.
4. The affiliations of the Japanese fishing, fish-processing and fish-exporting industries with large combines should be severed. In general, there should be wide distribution of ownership, management and control within the fishing industry and allied industries.
5. Japanese fishing near the American continents, island possessions of the United States and in strategic areas should be prohibited. The prohibited zones should be sufficiently wide to assure effective enforcement.

6/ These policy principles which conform to those submitted to SWNCC by the State Department are basic for the entire period of military occupation. Operations which are started under these principles by military government authorities should be continued, with modifications as the conditions warrant, by any subsequent allied control authority.

6. Japanese fishing operations should conform strictly to provisions of international agreements of which the Allied countries are parties.

The first principle above, in the production of sufficient fishery products for domestic consumption 7/, is developed with consideration, on the one hand, of relieving the United Nations in feeding the Japanese population during a period of critical food shortages in the United Nations and liberated areas, and, on the other hand, of providing useful and customary occupation for a large number of Japanese workers. The level of domestic food consumption is yet to be determined by military authorities. Total caloric consumption levels for the period of occupation of 1600 and 2000 are still being discussed. As soon as a decision is reached concerning the level of total food consumption and the part fish will play in this, quotas necessary for domestic fish supplies should be established. Because of the importance of fish as protein food in the Japanese diet, these quotas can be expected to be above present production.

The second principle follows from the first, since the extent to which the Japanese fisheries can produce following the cessation of hostilities will be dependent primarily upon the reconditioning and replacement of fishing boats and gear and the provision of fuel and supplies. In the rehabilitation of the fisheries the coastal fisheries and aquiculture should be given primary attention and insofar as practicable these

7/ Domestic consumption as used here means consumption by the occupying forces as well as the Japanese population.

should provide all the necessary marine products. Although it might be advantageous to reestablish and develop the larger scale deep sea fishing, trawling, the Northern waters fisheries and fishing in colonial waters, it appears practicable to give first attention and emphasis throughout the period of military government to the coastal fisheries and aquiculture because: (1) in the past these fisheries have provided the great bulk of Japanese requirements; (2) the fishing and processing operations are simple and require equipment and facilities the major portion of which might be produced domestically; (3) problems of rights to the fisheries will be largely avoided since the majority of vessels engaged in the coastal fisheries stay within thirty miles of shore; (4) the coastal fisheries are largely communal in character and not dominated by large companies; (5) it can be expected that a large percentage of the small boats will be available whereas a considerable number of the larger ones will have been destroyed.

The deep sea fisheries in home waters, trawling, fishing in Soviet waters and in colonial waters should be exploited to provide products to the extent that the coastal fisheries and aquiculture are unable to meet domestic requirements. Shortages of small boats and the necessary equipment for the immediate full exploitation of the coastal fisheries may make it desirable to operate some of the larger vessels which may be available and for which the necessary equipment is also at hand. Also, since the demarcation between "coastal fishing" and "deep-sea fishing in home waters" is merely an arbitrary one, it may well be practicable to

permit some of the latter operations. For example, the off-shore sardine fisheries which are efficient producers and not carried on in distant waters might be permitted to resume operations. In general, however, emphasis should be on the coastal fisheries and aquiculture. These should be worked as fully as the available equipment permits and as is consistent with conservation regulations. 8/

In the reestablishment of processing facilities for marine products, attention should be given to the drying and salting of fish and the preparation of seaweed. Fish canneries should not receive undue emphasis for canned fish is normally consumed only in small quantities by the Japanese population.

A workable system of distribution of fish and other marine products during the period of military occupation is of utmost importance. The system of distribution and rationing during the war period has not worked particularly well and with final defeat and surrender this may be in a stage of collapse. A plan for regulated and equitable distribution of food fish is as essential as the restoration of production.

The severing of fishery companies from large parent organizations (such as the Mitsui and Mitsubishi Combines) is recommended as a step in the breakdown of the large Japanese combines which control much of the non-coastal industry. The fishing corporations affiliated with such

8/ Japanese regulations (both national and local) designed for conservation of marine resources should be observed by the military government authorities. Coastal fisheries of some areas are known to have been depleted and this has often been given as one reason why the Japanese fishermen have gone far afield into foreign waters.

combines, are primarily in the large scale modern operations such as the northern fisheries, trawling and deep sea operations and in the marine product export business. If the prewar corporate relations are existing at the time of occupation the fishing companies should be severed from these parent combines; this does not necessarily mean that the fishing companies themselves should be broken down, although in view of the recent organization into large government controlled companies this may also be desirable.

The curtailment of Japanese fishing operations near the American continents, island possessions of the United States and in strategic areas is designed both as a security measure and as a step in checking Japanese fishery interests, which had reached far afield in distant waters just previous to the war. Until further international understandings are reached regarding nations' use of fish resources in foreign or "open" waters, Japanese fishing in such foreign areas should be stopped; certainly such operations should not be permitted prior to a peace settlement.

The last principle affects the Japanese Antarctic whaling and the north Pacific sealing operations. Although Japan has never been a party to the international control of Antarctic whaling if Japan is allowed to resume these operations because of shortages in fats and oils, its activities should strictly conform to the provisions laid down by

the international conventions to which the United States is a party. 9/ Since the International Fur Seal Treaty is one designed for the conservation of this resource until the facts as to the condition of the Japanese seal herd is established, any sealing which may be authorized by the military government should be undertaken in conformity with sound conservation principles.

Program for Early Period of Occupation

The major problems of the early period of occupation, that is the period of military government control, will be to restore the production of the coastal fisheries, to maintain and perhaps increase the production from agriculture, and to establish a system of distribution of marine foods.

The restoration of the coastal fisheries will require:

1. inventory of boats and gear
2. the return of requisitioned vessels to their former owners
3. the working out, in cooperation with naval authorities, of a system of permits and security regulations to take the place of Japanese wartime restrictions
4. aid in repairing and replacing boats, gear and other equipment
5. allocation of fuel necessary for the operation of the powered fishing boats.

9/ The whaling agreements in effect with respect to the United States at the present time are: (1) the Convention for the Regulation of Whaling signed at Geneva September 24, 1931, Treaty Series 880; (2) Agreement for the Regulation of Whaling, and Final Act, signed at London June 8, 1937, Treaty Series 933; (3) Protocol Amending the Agreement for the Regulation of Whaling, signed at London June 1937 and Final Act of the Conference, signed at London June 24, 1938, Treaty Series 944.

The seizure of records should yield essential data concerning the first item although the large amount of destruction of boats likely to occur immediately preceding military occupation can be expected to necessitate an inventory of current conditions. General rules for registration of boats for all of Japan should be worked out, but the actual inventory should be carried out on a prefectural, or even more local, basis.

Strict war emergency fishing restrictions are expected to be in force in the period immediately preceding military occupation; during this period it is likely that fishing, even in the near coastal waters will be greatly curtailed if not brought to a virtual halt. The relaxation of these emergency restrictions and the establishment of new ones will be basic to the revival of the industry. A set of regulations shaped so as to permit sound naval security should be drawn up as soon after military occupation as possible. If the territory is occupied in sections, emergency restrictions in those areas occupied may need to be relaxed before the general regulations are promulgated. In working out these regulations and the permits to be used military government authorities should review the experiences of occupation authorities in Italy and Sicily in order to take advantage of their experience for those aspects which are applicable to Japan. 10/

10/ Regulations regarding night fishing, for example, should be reviewed. It has been reported that night fishing has been prohibited in Japan. Releasing or modifying this restriction may add to the coastal production.

It is expected that a large number of the small fishing boats will be available but that motors and parts will require repairs and replacements; priorities should be granted for these, for fish nets and other gear, for paint, net preservatives and for fuel oil required for the operation of powered boats. In order to get the coastal fisheries into quick production it is suggested that the possibility of providing occupying forces with a minimum basic supply of gear (particularly netting) be seriously considered.

In maintaining and expanding aquiculture production, the distribution of young fish should be arranged, preferably through the prefectural experiment stations and fishery societies which normally carry on this function. In order to encourage this production quotas might be established. 11/

For processing by drying and salting, the common methods for domestic markets, salt will be the major article in critical supply. 12/ Fish processing should be afforded a high priority in the demand upon the available supplies of this commodity.

It is expected that the distribution of fish for food will be handled in conjunction with the distribution of other foodstuffs. The main problems involved will be the seizure and inventory of food stocks and the control and distribution of emergency rations and, later, with the development of a food policy, the establishment of fish transport, distribution and pricing systems.

11/ These quotas should be reasonable ones. Some of the wartime quotas for aquiculture are thought to be unrealistically high.

12/ See Appendix D.

Employment of Japanese Administrative Machinery and Personnel

It will be desirable to utilize existing Japanese administrative machinery and personnel wherever their use will not interfere with the objectives of occupation authorities. This is recommended with a view to greater efficiency because (1) the local administrative structure and personnel have experience in dealing with the problems peculiar to Japanese fisheries and the processing and distribution of marine foods, and (2) the number of Allied personnel required will be reduced, desirable since there are few Allied experts in the field of Japanese fisheries.

Recent political appointees (which can be assumed to be upholders of totalitarian views) should, of course, be removed from key positions in the government agencies dealing with fisheries and food production. But many of the permanent Civil Service employees and many of the real fishery experts whose political views may not be hostile to the peaceful and efficient carrying out of military government control measures may prove of invaluable assistance. Some of this personnel may be found in the Fisheries Bureau in Tokyo while others may be located in the prefectural bureaus dealing with marine products at the fisheries experiment stations in the various fishery organizations and at the fisheries schools. Local advisors will be essential in the actual administration of the fishery program at the local level. The various Japanese fishery societies which touch upon every phase of the work and life of Japanese coastal fishermen might, with proper safeguards, be used in promulgating and carrying out the fishery program. For this purpose the *gyogyo kumiai* formed by the small-scale village fishermen and the cooperatives which have grown from these organizations might be particularly helpful.

Part II

BASIC BACKGROUND MATERIAL

I FISHING AREAS, RESOURCES AND SEASONS

Fishing Areas

Along the eastern coast of Asia from Bering Sea on the north almost to Australia on the south is one of the world's richest fishing regions. In this vast area of the Pacific extending through 65° of latitude and east as far as the 180th meridian the Japanese carry on their fishing operations. Other people bordering these waters fish their local grounds but none have spread their operations far afield as have the Japanese.

Within this western Pacific fishing area, the Japanese operations are most intensively developed in the coastal waters of Japan proper, in the Pacific immediately east of the main islands, in the Yellow Sea and the East China Sea, along the Japan Sea coasts of Korea and Karafuto, and around the margins of the Sea of Okhotsk (Figure 1). Of secondary importance are the tropical waters of the Pacific Mandated Islands and Indonesia and the cold waters of Bering Sea. Outside the western Pacific area Japanese carry on Antarctic whaling and have also operated fishing vessels off the coasts of Alaska, British Columbia, Mexico, Central America and South America of the Western Hemisphere and also in Indian waters of the Far East.

In the areas described above as those in which Japanese fisheries are most intensively developed the natural conditions of water depths and ocean currents are favorable to marine life. Except for the Japan

SEA FISHERIES OF EASTERN ASIA

PRINCIPAL FISHING GROUNDS

- Areas of greatest activity
- Areas fished by small draggers
- Offshore fishing for
 - Tuna
 - Bonito
 - Crab
 - Salmon

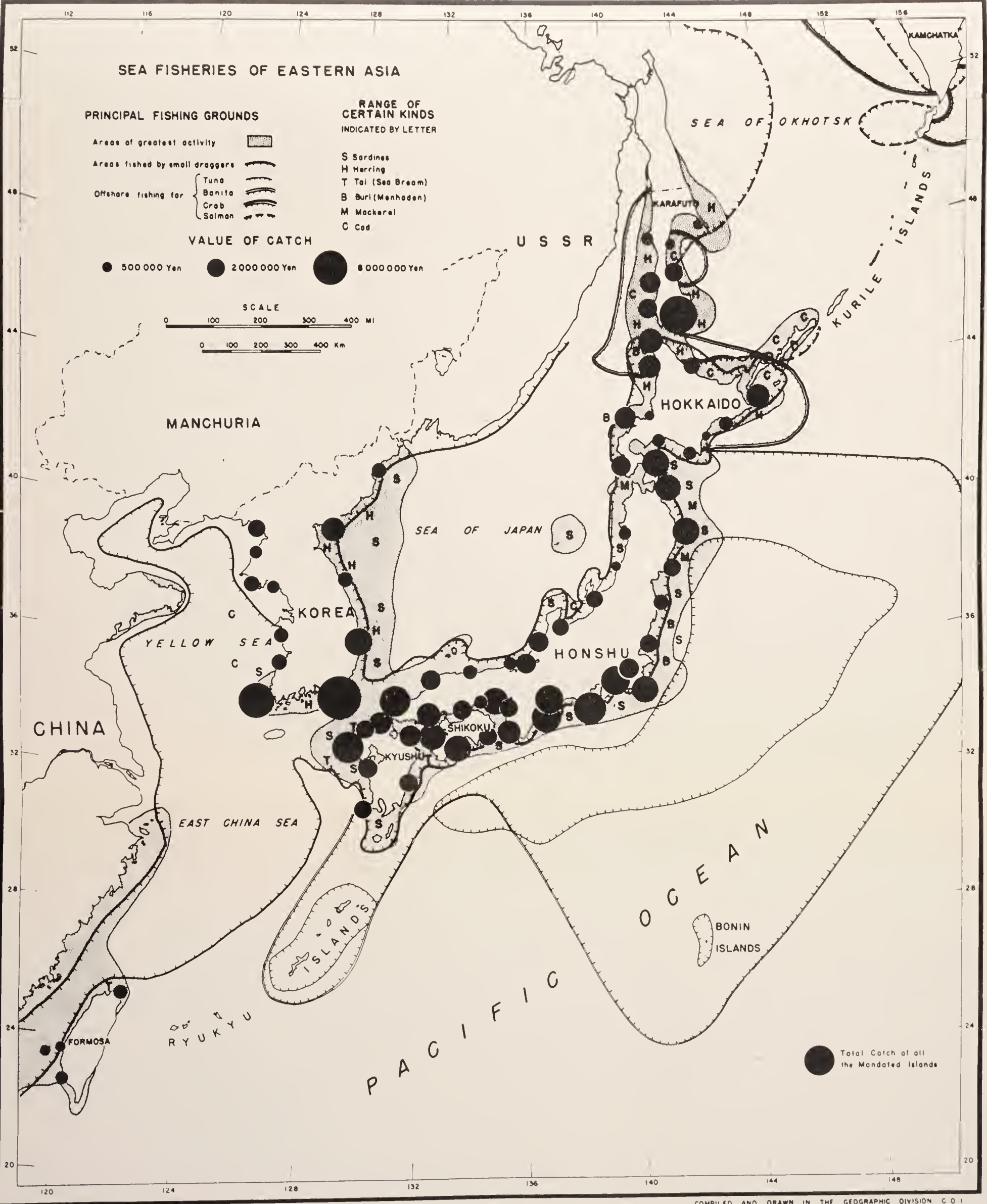
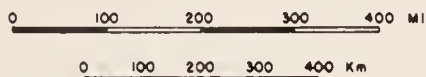
RANGE OF CERTAIN KINDS INDICATED BY LETTER

- S Sardines
- H Herring
- T Tai (Sea Bream)
- B Buri (Menhaden)
- M Mackerel
- C Cod

VALUE OF CATCH

- 500 000 Yen
- 2 000 000 Yen
- 8 000 000 Yen

SCALE



Total Catch of all the Mandated Islands

Sea which is relatively deep, most of the waters bordering Asia from Kamchatka to Formosa (Taiwan) are shallow, a condition conducive to prolific marine life. Although the continental shelf around Japan proper is not large, within the area of intensive and secondary Japanese operations the continental shelf is estimated at approximately 2,000,000 square miles. 13/

It is also of significance that in the waters around Japan ocean currents from tropical and polar latitudes converge, for this too creates a favorable environment for fish. The warm current, the Kuroshio or Japanese Current, coming from the South Seas washes the eastern coast of Kyushu, Shikoku and southern Honshu then flows northeastward to central Honshu where it changes its direction to the east. A branch stream of the warm Kuroshio enters the Japan Sea by way of Tsushima Strait, washes the Japan Sea coast and partly reaches eastern Karafuto and Sakhalin by way of the west coast of Hokkaido, entering the Okhotsk Sea through Soya Strait. The cold Oyashio Current flows south from Bering Sea along the Kurile Islands and washing the east coast of Hokkaido, approaches the northeastern coast of the mainland of Japan to meet the warm Kuroshio. In the Japan Sea a cold current (Liman Current) which flows westward along the coast of Soviet Russia continues southward along the Korean coast to meet warm currents in Tsushima Strait.

The areas of marked convergence, and therefore of the mixing of unlike waters, have the most abundant plankton and marine life. The

13/ Japan's Fisheries Industry 1939 (Special issue of the Japan Times and Mail, 1939)

greatest zone of convergence and mixture of waters in the western Pacific extends from about 36° N. latitude off the east coast of Honshu northeastward toward Hokkaido and the Kurile Islands; this area is one of the most important of all Japanese fishing grounds. Likewise currents converge in the Japan Sea, also an area of sizable fisheries.

The power of the ocean currents varies with the seasons. The warm current, strong in summer, flows farther north in that season; the cold current which is more powerful in winter comes farther south in that season. Thus fish of the warm waters may be seen in summer at the same places as fish of the cold waters are seen in winter.

Fish Resources

In view of the extensive latitudinal range of Japan, the confluence of warm and cold currents, and the vast areas of continental shelf, it is not surprising that the Japanese catch has great variety. The kinds of fish living in Japanese waters, even with closely related species grouped together, number 8,000; according to strict scientific distinctions the number of species is reported to be about 20,000. More than 400 kinds are used for food or are otherwise commercially important. Table 2 lists the species having large economic value according to scientific families; Table 3 lists the twenty-four most important kinds of fish landed in Japan in 1936 by order of weight giving the Japanese and English names.

Certain varieties are most abundant in the cold northerly waters whereas others are most abundant in the warm subtropical waters. In the mixed waters between, both cold-water and warm-water species are caught.

TABLE 2

The Important Japanese Fish by Family Groups

- I Clupeoid Fish
 - Herring -- Clupea pallasii
 - Sardine (pilchard) -- Sardina melanosticta
 - Anchovy -- Engraulis japonicus
 - Round herring -- Etrumeus micropus
- II Scombroid Fish
 - Bonito (oceanic skipjack) -- Katsuwonus pelamis
 - Tuna (several kinds)
 - Albacore -- Germo alalunga
 - Blue-fin tuna -- Thunnus orientalis
 - Yellow-fin tuna -- Neothunnus macropterus
 - Mebachi (mebati) -- Parathunnus mebachi
 - Mackerel -- Scomber japonicus
 - Frigate mackerels -- Auxis spp.
 - Seer-fish -- Cybium spp.
- III Salmonoid Fish
 - Salmon
 - King or chinook salmon -- Oncorhynchus tshawytscha
 - Red salmon -- Oncorhynchus nerka
 - Silver salmon -- Oncorhynchus kisutch
 - Humpback or pink salmon -- Oncorhynchus gorbuscha
 - Chum or dog salmon -- Oncorhynchus keta
 - Salmon or Salmon trout -- Salmo spp.
 - Smelt -- Osmerus dentex
 - Surf smelt -- Hypomesus olidus
 - Chars or Dolly Varden trouts -- Salvelinus spp.
- IV Gadoid Fish
 - Cod -- Gadus macrocephalus
 - Alaskan pollack -- Theragra chalcogramma (Gadus chalcogramma)
- V Carangidae
 - Yellowtail -- Seriola quinqueradiata
 - Horse mackerel -- Trachurus japonicus
 - Jacks -- Caranx spp.
- VI Sparidae (Sea breams)
 - Sea bream or porgy -- Pagrus major
 - Pagrus cardinalis (Evynnis cardinalis)
 - Pagrus tumifrons (Taius tumifrons, Dentex tumifrons)

TABLE 2 (Continued)

The Important Japanese Fish by Family Groups

VII Swordfish and Spearfish

Swordfish -- Xiphias gladius

Spearfish or marlin -- Makaira spp.

Spearfish -- Tetrapturus angustirostris

Sailfish -- Istiophorus orientalis

Note: Numerous other species of fish as well as shellfish and crustaceans are taken in large quantities.

TABLE 3

Important Fish Landed in Japan

1. iwashi -- sardine, pilchard, anchovy
2. nishin -- herring
3. tara -- cod
4. saba -- mackerel
5. sake -- salmon
6. masu -- trout
7. buri -- yellowtail (amberfish)
8. maguro -- tuna
9. aji -- yellow mackerel
10. karei and hirame -- flounders
11. katsuo -- bonito
12. tai -- porgy, sea bream, red snapper
13. fuka -- shark
14. samma -- mackerel -- pike
15. bora -- mullet
16. tobi-uo -- flying fish
17. * konoshiro
18. sawara -- Spanish mackerel
19. * kurodai
20. wagasagi -- surf smelt
21. * ayu
22. unagi -- eel
23. koi -- carp
24. kajiki -- spearfish and swordfish

Source: Japan's Fisheries Industry 1939 (Special issue of the Japan Times and Mail, 1939).

* No English equivalent. Kurodai is one of the sea breams. Ayu is a small fish resembling trout very popular in Japan.

Although lines of demarcation are not distinct and vary according to seasons and currents the Japanese waters may be divided into four regions: (1) the cold region; (2) the temperate region; (3) the warm region and (4) the true oceanic region. In the cold region which includes the Okhotsk Sea, waters surrounding the Kurile Islands, Karafuto and Hokkaido, and the northern portion of the Japan Sea bordering the Asiatic mainland are great quantities of the salmonoid fish, the gadoid fish and herring. The Japanese king crab is also caught in this region. The waters of the temperate region, which includes those bordering the southern coast of Hokkaido and the three main islands of Honshu, Shikoku and Kyushu, abound in sardines, mackerel, horse mackerel, yellowtail and sea breams. In the summer bonito and tuna are found in coastal waters and in the southern part of the region oysters are cultivated. South of Japan proper in the waters of Loochoo Islands (Ryukyu Islands), the Bonin Islands and Formosa bonito, tuna, swordfish, spearfish and frigate mackerel and horse mackerel predominate. From the oceanic region in the Pacific east of Japan come bonito, tuna, spearfish and swordfish.

A Japanese source, considering only Japan proper, groups the more important commercial fish according to the area of catch as follows: 14/

14/ Japan's Fisheries Industry 1939 (Special issue of the Japan Times and Mail, 1939).

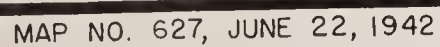
<u>Fish generally caught throughout Japan</u>	<u>Fish caught in North Japan</u>	<u>Fish caught in South Japan</u>
iwashi (sardine (anchovy (round herring	nishin -- herring	buri -- yellowtail
karei (flatfish hirame (flatfish	sake -- salmon	tai -- porgy or sea bream
maguro -- tuna	tara -- cod	aji -- yellow mackerel
samma -- mackerel - pike	masu -- trout	bora -- mullet
kajiki (spearfish (swordfish	wakasagi -- surf smelt	sawara -- Spanish mackerel
fuka -- shark		katsuo -- bonito
		* kurodai
		* konoshiro
		* ayu
		unagi -- eel
		koi -- carp
		tobi-uo -- flying fish

* No English equivalent.

Fishing Seasons

Japanese fishing is carried on throughout the year although in some areas certain seasons are relatively unimportant, many species have peak seasons, and certain fisheries have closed seasons. Figure 2 shows the seasonal pattern of the Japanese fisheries and in the following sections the peak seasons are indicated for the more important species. For several of the special "deep sea" fisheries the seasons may be summarized as follows:

Northern Fisheries (Russian waters, Karafuto, Kuriles and northern Hokkaido). April to October is the most important season in which the commercial operations are concentrated.



DRAWN IN THE GEOGRAPHY DIVISION, O.S.S.

Deep-Sea Fishing Off the East Coast of Japan. In the summer months the operations are largest. These follow the northward migrations of Scombroids, sardines and other species. As Figure 2 shows, however, there are many seasonal variations within this vast area.

Trawling in the China Sea. This is limited to October 1 -- June 1 north of 25° N. and to May 1 -- November 1 south of 25° N.

Antarctic whaling. In 1937-1938 this was limited to November 1 -- March 16 by Japan. The season for other nations was December 8 -- March 15. (See page 113)

Areas and Seasons of the Northern Region by Species

In the northern cold waters, roughly north of 40° , herring, cod, salmon and crab are the mainstays of the Japanese fisheries. The southern part of this area -- northern Honshu, Hokkaido, the Kurile Islands and Karafuto -- are Japanese territories whereas the northern part of the area -- Sakhalin, Kamchatka and the Siberian Coast are Soviet areas.

Herring (nishin) is the leading product of the cold waters and next to sardines the largest Japanese fish catch. Herring are most abundant from northern Sakhalin to Aomori Prefecture, particularly on the western side of the former island, but occur in lesser numbers much farther south along the coasts of Japan proper and Korea. The southern limit on the Pacific coast is about 37° (Fukushima Prefecture) and in the Sea of Japan on the east about the latitude of Sado Island and on the west about 35° (Fusan City in Korea).

There are two spawning groups: the spring spawners and the fall spawners. The spring herring, the catch of which is larger, appear in the Sea of Japan from about mid-March to mid-April in the waters of Akita and Aomori Prefectures and those of southwestern Hokkaido, then proceed northward as the waters warm. In May spring herring are caught off the east coast of Hokkaido and in Karafuto and Sakhalin waters. After three waves of spawning, spring herring come in less developed schools on feeding migrations. Winter herring are taken mainly in Pacific waters. As Table 12 shows the herring catch declined markedly from 1934 through 1938, the 1938 catch being about one-sixth of the 1934 catch. However, this was a temporary decline reflecting the cycle of abundance typical of herring; the larger catches of 1939 and 1940 indicate this.

Cod (tara), including the Alaskan pollack which is fished in the same waters, in most years is caught in quantities about as large as herring although the catch is less valuable than that of salmon. Cod fisheries have their southern limit on the Pacific coast at 38° and in the Japan Sea, where waters are colder farther south than along the Kuroshio-warmed Pacific coast, at about 35° . Cod are important in the northern prefectures of Honshu, all around Hokkaido, in waters of the Kuriles and Karafuto. The west coast of Karafuto has more extensive cod fisheries than the east coast. In the Russian waters cod fishing and salmon fishing grounds coincide in general, i.e. along both the east and west side of Kamchatka, along the Siberian coast in the vicinity of the town of

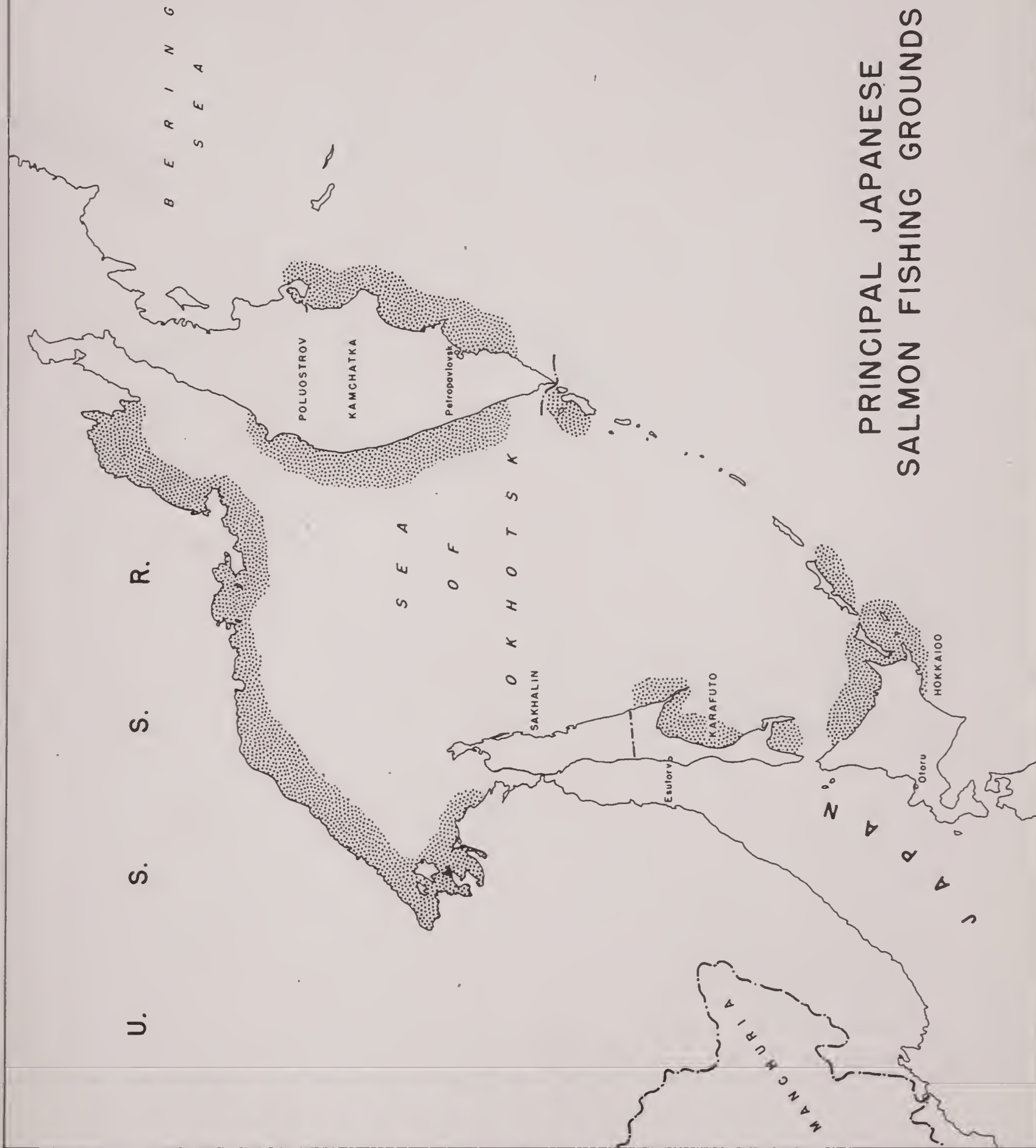
Okhotsk and also in the Gulf of Penzhinskaya. Japanese fishermen have also caught cod in Bering Sea. The chief season is from March to October.

Salmon and salmon-trout, anadromous fish which are taken in large numbers from April to December the time of their spawning migration, are characteristic of the northern waters. Of the species of this group the most important in the Japanese fisheries is the dog or chum salmon, (sake), (Oncorhynchus keta) which is found in the waters stretching from the northeastern part of Japan proper to Kamchatka. Of all the varieties of salmon it is the one most abundant in waters of Japan proper (north of 35°), but occurs in larger numbers in waters of Hokkaido, Karafuto and Sakhalin, the Kuriles and Siberia. These salmon ascend the rivers in September to December, later than other salmon. The red salmon (beni sake or beni masu), (Oncorhynchus nerka) is found in the waters north of Honshu with the largest schools occurring off the coast of Kamchatka and smaller amounts taken in the seas off the Kuriles. The king or chinook salmon (masunosuke), (Oncorhynchus tshawytscha), the largest, is less far-ranging than the dog and red salmon, occurring no farther south than Hokkaido. It spawns earliest in spring, appearing in the latter part of April in vast numbers off the river mouths, especially in Kamchatka and the coasts of the Okhotsk Sea. The largest numbers are taken off the east coast of Kamchatka. The run is earlier in the south than the north as it begins with the first spring freshet. Pink salmon (masu), (Oncorhynchus gorbuscha) is taken in great abundance being the species canned in largest quantities. While it is caught in practically every locality within the

Kamchatka and Okhotsk Sea areas, the largest amounts are taken off the east coast of Kamchatka. The silver salmon (gin sake), (Oncorhynchus kisutch) is caught in relatively small quantities, chiefly in the seas off Kamchatka. Salmon-trout (*Salmo* sp.) is a smaller fish taken chiefly in waters of Hokkaido and Karafuto; it is rare in Kamchatka and is absent in northern Honshu waters. Figure 3 shows the main areas of the composite salmon catch.

Crab, especially the king crab (Taraba-gani), (Paralithodes Camtschatica), provides an important export product of the northern fisheries. The fishing grounds (shown in Figure 4) occur in the cold waters from Bering Sea to the northern end of the Japan Sea. Floating factories operating off the Kamchatka coast accounted for about half the 1938 catch; shore based operations in eastern Hokkaido, in Karafuto, the northern Kuriles and Kamchatka accounted for the rest. The most lucrative of all Japanese crab fishing areas is off the west coast of Kamchatka south of 58°.

The crab fishing season varies according to the area. In Hokkaido it starts the early part of April and ends in late June, reaching the peak between mid-April and early May. Along the east and west coasts of Karafuto operations are possible generally from the earlier part of March to the beginning of September; the fishing season in this region reaches its height between the latter part of March and April. The operating season for the floating canneries extends from the earlier



PRINCIPAL JAPANESE
SALMON FISHING GROUNDS

Figure 3

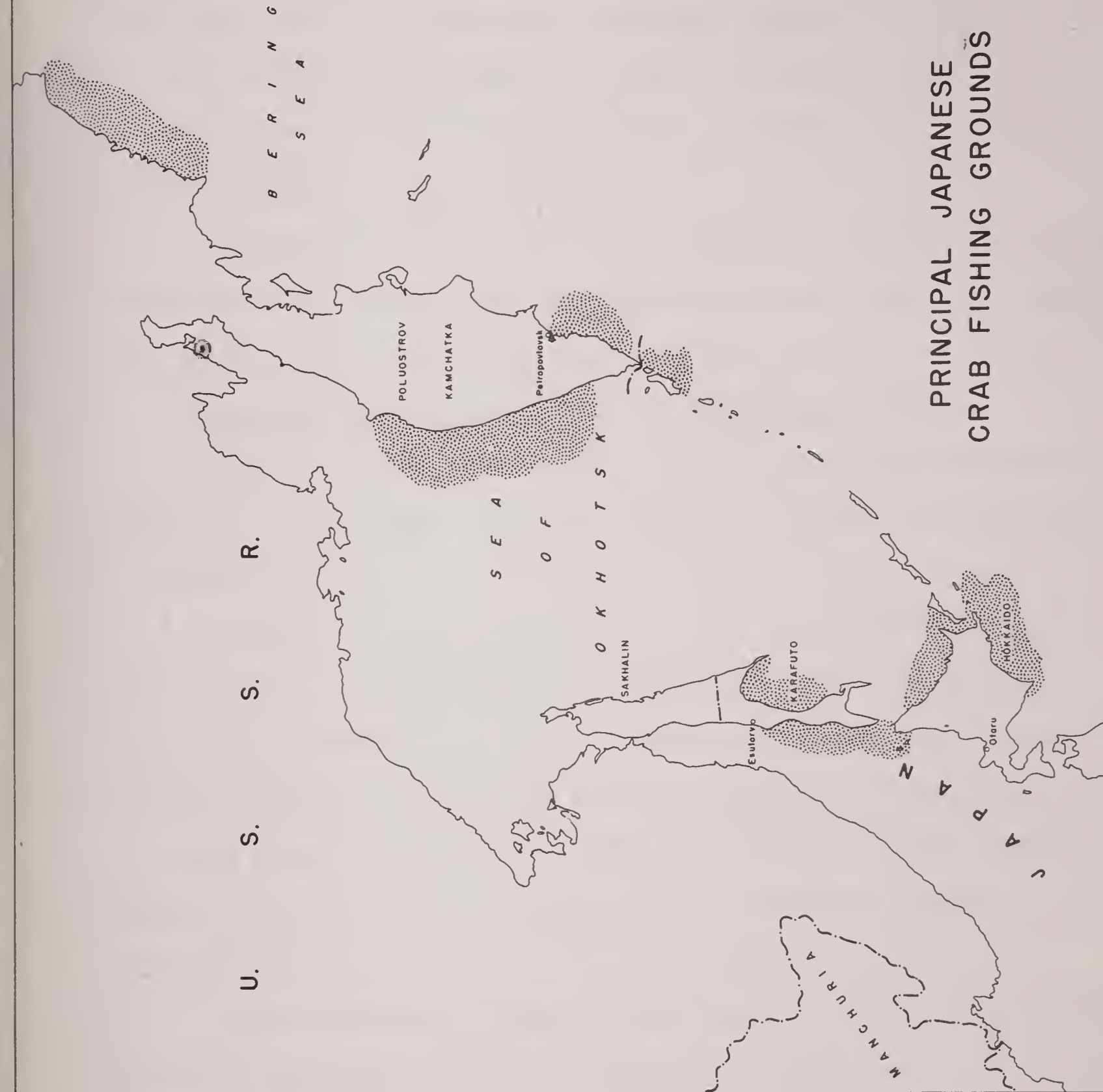


Figure 4

part of April to the beginning of September, May and June being regarded as the best part of the season.

Also important in the northern waters is the scallop (hotate-gai) which next to the abalone, is the most important edible mollusk in Japanese fisheries by weight of catch. The scallops are most abundant on the east and northeast coast of Hokkaido, north from Nemuro, and in Atei Bay, Karafuto. Aomori Prefecture supplies some.

Other marine products of lesser importance in the northern waters are cuttlefish which are taken in Hokkaido and Aomori Prefecture; smelt; the flatfish (especially flounder); whales; sea-otters and fur seals.

Areas and Seasons of Central and Southern Japan by Species

South of 40° N. sardines, the Scombroids, sea bream, yellowtail, flatfish, horse mackerel, the Spanish mackerel and swordfish are taken in large quantities.

Sardines (iwashi) occupy first place both in quantity of production and the value of the catch among all the marine products of Japan. Of the annual fish catch of Japan proper of slightly more than 3 million metric tons, sardines account for more than 50 percent in quantity and about 20 percent in value. ^{15/} It is the leading species caught in both the coastal fisheries and the so-called "deep-sea fisheries".

Japanese sardines which include the anchovy and the round herring as well as the true sardine, are widely distributed in the waters

^{15/} In addition the sardine catch of Korea is approximately 30 percent of its fish production. Korea production of sardines in recent years has averaged approximately 1 million metric tons.

extending from Karafuto and Hokkaido in the north to Formosa in the south -- in the Pacific, the Japan Sea and the China Sea. The coasts of Nagasaki, Hyogyo, Shizuoka, Chiba, Fukushima, Miyagi, Ibaraki, Iwate and Aomori prefectures and Hokkaido are noted for large catches (Figure 5). The fishing grounds are in general within thirty miles of shore. Much of the catch is taken by the coastal fishermen, but part is taken by large-scale operations and is classed with the deep sea fisheries.

Sardine fishing is carried on all year round with, however, different seasonal peaks in various localities. Figure 6 summarizes the seasons for the chief producing areas in the coastal waters of Japan proper.

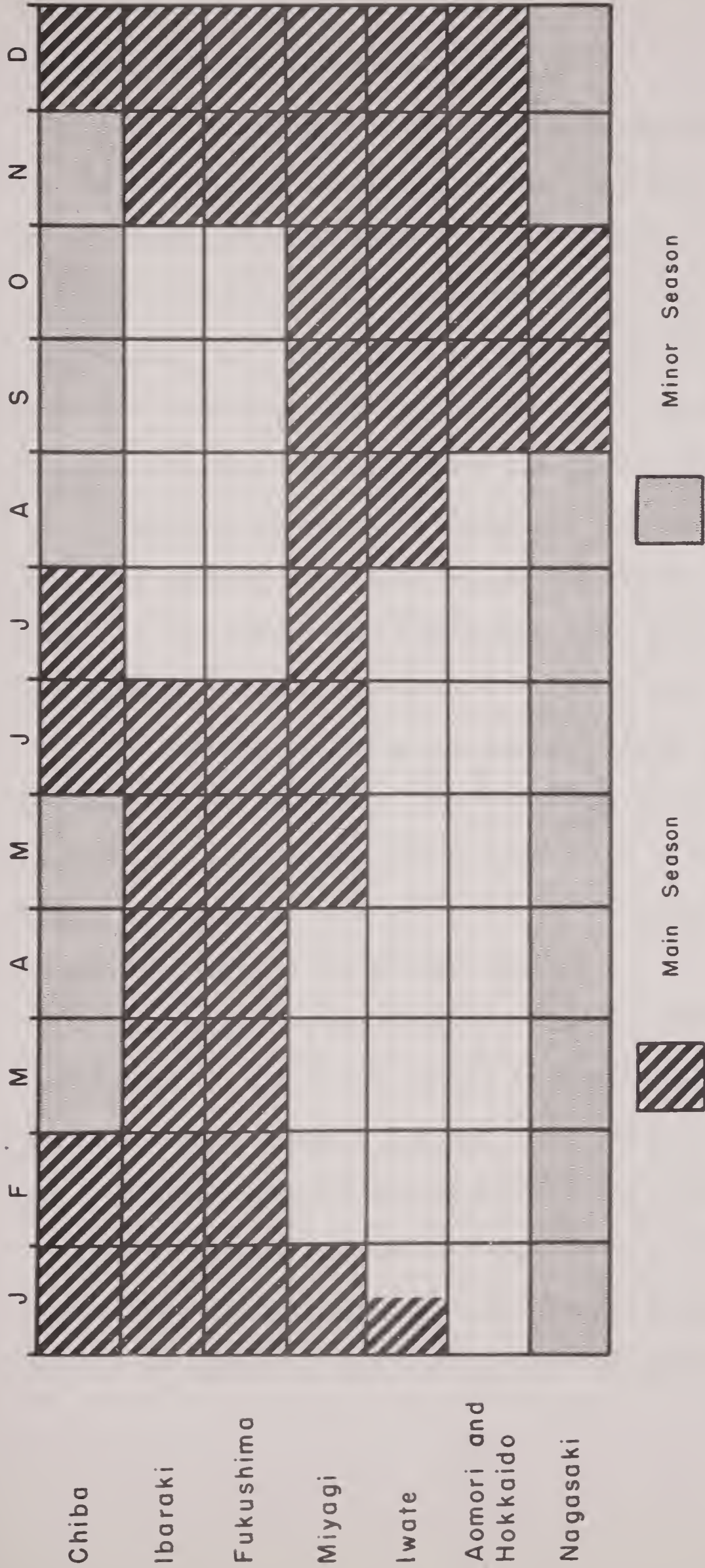
In the waters farther offshore large schools of sardines migrate with considerable regularity: in the spring the migration is northward with the warming waters; later, they reverse their migrations. The swimming layer is deeper in the southern waters, varying from south to north with the thickness of surface warm layers. The large schools are recognized by the dark brown color effect on the water surface; where they swim at great depths, their wake is indicated by tiny bubbles of air. Their predators -- mackerel, tuna and other Scombroids -- are also signs of their presence.

The Scombroids. These are predatory pelagic species having vast oceanic distribution and gathering into relatively small schools to feed. In general the Japan Sea is poor in Scombroids and they are virtually unknown in the Inland Sea. In waters off the east coast, however, they

Figure 5.



Figure 6



SARDINE FISHING SEASONS IN JAPAN

PREPARED IN THE MAPS AND GRAPHICS DIVISION, F.E.A.
NO. 2587-C

are taken in large quantities.

The true mackerel or saba (Scomber japonicus) is the most important in tonnage and value; in 1940 the catch amounted to more than 92 million pounds and was valued at ¥ 10.6 million. Mackerel are numerous in the coastal waters of Japan as far north as Hokkaido but are taken only in small quantities north of this. They are taken only in small numbers in the Japan Sea, north of 40° on the Honshu coast. Ishikawa, Toyama and Niigata prefectures are the chief areas of the west coast.

Mackerel are caught at almost all seasons, but during the summer when they approach the coasts the coastal fishing season reaches its peak. In this season they prefer bays with depths up to 20 meters, returning in winter to depths of 40 to 100 meters.

In quantity of production tuna and bonito rank after only sardines, herring, cod and mackerel. They are caught in both the coastal waters and the high seas, slightly more being taken in the latter; in 1936 about 93 million pounds of tuna were taken in the deep sea fisheries and 74 million pounds in the coastal waters.

The range of these species is immense; hardly any marine district from Etorofu in the Kurile Islands to Formosa is without tuna fishing and to the east of Honshu the operations extend as far as 2,000 miles out into the Pacific and to the south as far as the South Seas.

Four species of tuna are caught in considerable quantity: long finned tuna (Thunnus alalunga), yellow tuna (Neothunnus macropterus), black tuna (Thunnus orientalis) and mebachi (Parathunnus mebachi).

The first of these, the long-finned tuna, is rarely found in the Japan Sea, but is widely distributed in the Pacific. It migrates northward in spring, reaching the northeastern shores of Japan in summer where it is caught with bonito. Yellow tuna is widely distributed along the Pacific coast from Hokkaido south to Formosa, but is rarely caught in the Japan Sea. It migrates to the northeast coast of Japan in summer, approaching fairly close to shore. Black tuna has wide distribution from the Kuriles to the South Seas and unlike the other species is caught in fair amounts in the Japan Sea. South of Kyushu it is found all year round but along the coast of Honshu moves north in early summer and returns south in late autumn. Mebachi has a distribution from about the northern boundary of Chiba Prefecture to waters south of Formosa on the Pacific side, and is not found in the Japan Sea.

The peak season for tuna in the coastal waters is the summer although some species, for example the black tuna on the Pacific side, are taken in winter.

Sugiura 16/ divides the deep sea tuna grounds into the following six districts of which the first three accounted for more than 90 percent of the catch:

1. Hokkaido and northeast Honshu
2. The Izu district, extending south from the Izu Peninsula
3. The Nankaido district extending from Shizuoka Prefecture southwestward toward Shikoku
4. From south Satsuma southward

16/ Sugiura, Y. Suisan, 1939.

5. Northwest Kyushu district covering the seas northwest of Kyushu
6. The South Seas district covering seas south of Formosa.

The peak season in Hokkaido and northeastern Honshu lasts five months from July until November. In southern Izu, the Nankaido and southern Satsuma autumn, winter and spring are the seasons and in the South Seas the tuna fishing is done largely in winter and spring.

Bonito, smaller than tuna, frequent waters of the Kuroshio following this warm current toward the northeast in the spring reaching as far north as Aomori Prefecture and late in autumn return southwestward. Bonito fishing is conducted along the entire Pacific coast, but the most important centers are Shizuoka, Kochi and Kagoshima prefectures. Although in the southern prefectures bonito is taken all through the year, the main fishing season is from April to October.

Buri or yellowtail 17/ (*Seriola* sp. chiefly *Seriola quinqueradiata*), a member of the Carangidae is taken in large quantities; in 1938 about 73 million pounds were caught in Japanese coastal waters. They move northward along the Pacific coast in the warm waters as far as northern Honshu. They are most abundant in the coastal waters of southeast Japan from Choshi to the coast of Shikoku, Sagami Bay being particularly productive. They are most abundant along the coast of Shikoku in January but remain until May; they migrate to the waters of Tosa province during the months of December and January. In general winter and spring constitute the fishing season.

17/ Relative of the Atlantic amberjack. It should not be confused with the many other fish called "yellowtail" in various parts of the world.

Horse mackerel accounted for 66 million pounds of the coastal catch in 1938. This fish is taken in the water throughout central and southern Japan.

Tai (porgy, sea bream or red snapper) is really several species of which thru-madai (Pagrus major), chidai (Pagrus cardinalis) and kidai (Pagrus tumifrons) are the most important. These species together accounted for about 46 million pounds of fish landed in Japan proper in 1938 -- 27 million pounds of which were caught in coastal waters and 19 million pounds in the deep sea. Considered as a group these fish are caught from Hokkaido to Formosa along both the Pacific and Japan Sea coasts and are caught throughout the year. Madai, taken in largest numbers, swarms in the Inland Sea and the southern Japan Sea but is seldom found along the Pacific coast; kidai, on the other hand, is a deep-sea variety rare in the shallow waters of the Inland Sea.

Flatfish, largely flounders, are taken in quantities of 50 million pounds. Winter and spring are the main seasons.

Swordfish, i.e. kajiki 18/ which is an inclusive term used for several species, are caught in Pacific waters 50 to 300 miles off the eastern shores of Honshu and Hokkaido. In all about 3 - 5 million pounds of these are landed annually. The best catches are made in October, November and December with somewhat smaller catches made during August, September, January, February and March. The spawning season (April to July) is an off season. The catch is landed in largest quantities in

18/ Spearfish are sometimes included in this term.

Kanagawa and Miyagi prefectures with lesser amounts in Iwate, Aomori and Hokkaido.

Spanish mackerel, cuttlefish, octopus, sharks, ~~samma~~ 19/ and numerous species of shellfish and crustaceans are caught in the waters of central and southern Japan. Carp and eel are both caught and reared, ayn is reared and trout is caught in stocked inland lakes and streams. Some of these are mentioned later in connection with other aspects of the fishing industry as are shellfish, crustaceans and molluscs and seaweed, all important fishery products.

19/ Samma (Cololabis samma) is found in the same general grounds as tuna and bonito. In the high sea fisheries it is taken chiefly north of Chiba Prefecture and closer to shore than bonito and tuna.

II FISHING OPERATIONS: FISHERMEN, BOATS, PORTS, METHODS AND PRODUCTION

On the basis of actual operations Japanese fishing may be divided into the following groups, each of which has certain special characteristics: (1) Coastal Fisheries; (2) Aquiculture; (3) Deep-Sea Fisheries in Home Waters; (4) Trawling; (5) Northern Fisheries and (6) Special Fisheries. Each of these will be considered in turn, pointing out the methods and equipment of the operations, the species caught, etc. But because this classification lists some fisheries which are not mutually exclusive and because some types of data are not available by this grouping, a general discussion dealing with fishermen, boats, ports and the catch as landed by prefectures precedes the discussion by fisheries.

Fishermen

Number. Approximately $1\frac{1}{2}$ million Japanese are directly engaged in the fishing industries, i.e. fishing, aquiculture and the processing of marine products. It has been estimated that 20 percent of the people are directly or indirectly dependent on the fishing industry.

In fishing itself 1,027,170 people were employed in 1940 -- 624,739 full time and 402,431 part-time; in aquiculture 127,813 were employed of whom 23,396 were full time workers and 104,417 part-time (Table 4). 20/ Of those employed in fishing and aquiculture together about 45 percent were part-time fishermen, most of these depending upon farming for part of their livelihood.

20/ A later figure, an estimate for 1941, fixes the number of "marine laborers" as 700,000. The higher figure above appears to arise out of differences in classification. The 700,000 approximates the total number engaged full-time in fishing and aquiculture.

TABLE 4

Number of Persons Engaged in Fishing and Aquiculture in Japan Proper

Fishing		Aquiculture						
Employers	Employees		Employers	Employees				
	Male	Female		Male	Female			
					Total			
		Principal Occupation						
1936	232,828	360,123	69,640	429,763	7,875	12,256	6,027	18,283
1937	228,504	353,920	66,833	420,753	7,919	11,885	6,098	17,983
1938	220,296	333,539	68,432	401,971	7,673	10,547	5,828	16,375
1939	220,061	328,945	65,443	394,388	7,971	10,626	5,903	16,529
1940	221,108	335,340	68,291	403,631	7,933	9,696	5,767	15,463
		Subsidiary Occupation						
1936	244,689	137,935	57,287	195,222	86,421	21,620	20,428	42,048
1937	236,210	134,872	57,803	192,675	85,290	21,440	19,794	41,234
1938	231,026	126,541	56,044	182,585	78,212	21,113	20,762	41,875
1939	226,318	118,514	55,191	173,705	74,177	20,518	20,342	40,860
1940	224,647	120,644	57,140	177,784	66,993	17,962	19,462	37,424

Source: Toyo Keizai Nenkan, 1943 (Oriental Economy Yearbook)

In 1940 about 86 percent of those engaged in fishing and aquiculture were men and 14 percent women. During the war period the proportion of women has increased due to military conscription and the attraction of more lucrative occupations in war industries.

Distribution. Table 5 gives the data available concerning the regional distribution of fishermen. Hokkaido, the leading fishing prefecture, has the largest number -- more than 200,000 persons are supported directly by fishing and aquiculture in this prefecture. Nagasaki, Chiba, Shizuoka, Mie, Iwate and Yamaguchi prefectures each had more than 50,000 persons engaged in fishing in 1937. (Table 5).

Wages and Organization. Information concerning the method of payment and the wage rates of fishermen is fragmentary. Many are paid by a profit share system and many by a regular wage plus a share of the profits; some may receive only a direct wage payment.

In some of the small units of the coastal fisheries a simple profit share system is used whereby the owner of the boat receives a larger share than the fishermen, but is responsible for the cost of boat and net repair. This same system is also used in larger operations for a recent report of a large boat manned by 70-80 men indicates profit sharing. 21/ In this particular case, the profit after all deductions for ice, oil, bait, etc. were made, was divided at a ratio of 4 shares to the boat owner and 6 shares to the crew (the "shiburoku" or 4 to 6 system), the boat owner being liable for all expenses for the repair of

21/ Report of a prisoner of war, formerly a fisherman in Shikoku.

TABLE 5

Number of Fishermen and Fishing Craft by Districts, 1937

	<u>Number of Fishermen</u>	<u>Number of Fishing Boats</u>
Hokkaido	202,356	58,750
Aomori	46,006	9,864
Iwate	52,572	11,021
Miyagi	38,291	8,846
Akita	17,811	2,749
Yamagata	10,856	1,748
Fukushima	11,971	1,942
Ibaraki	32,074	6,502
Tochigi	5,263	356
Gumma	2,157	186
Saitama	3,465	185
Chiba	75,932	18,104
Tokyo	35,616	8,792
Kanagawa	28,016	7,160
Niigata	33,649	7,969
Toyama	24,412	2,662
Ishikawa	25,150	7,499
Fukui	12,496	3,695
Yamanashi	3,180	77
Nagano	19,884	682
Gifu	23,834	482
Shizuoka	53,951	8,497
Aichi	41,515	7,601
Mie	52,768	12,613
Shiga	18,112	1,268
Kyoto	13,318	3,369
Osaka	8,412	2,826
Hyogo	30,668	11,162
Nara	4,767	64
Wakayama	23,763	7,620
Tottori	14,125	2,821
Shimane	38,372	8,611
Okayama	20,191	7,043
Hiroshima	38,331	11,247
Yamaguchi	51,127	16,160

TABLE 5 (Continued)

Number of Fishermen and Fishing Craft by Districts, 1937

	<u>Number of Fishermen</u>	<u>Number of Fishing Boats</u>
Tokushima	17,796	6,049
Kagawa	24,803	8,339
Ehime	45,337	16,874
Kochi	40,110	8,978
Fukuoka	28,166	6,625
Saga	17,850	3,957
Nagasaki	80,476	20,853
Kumamoto	44,510	10,255
Oita	40,499	9,100
Miyazaki	18,276	3,588
Kagoshima	47,630	9,216
Okinawa	14,568	2,247
TOTAL	<u>1,534,432</u>	<u>366,254</u>

Source: Nippon Suisan Nempo, 1938.

boat and equipment. In the trawl fisheries the men are guaranteed a minimum wage and in addition receive a certain percentage allowed on the catch. 22/ Likewise on the floating canneries the men are allowed a percentage in addition to regular wages.

In the smallest coastal units the owner of the boat may be a single fisherman or several working in cooperation; in the larger coastal units, on the other hand, the owner is likely to be a joint stock company with the capital raised among wholesale fish dealers, ship-chandlers, bankers and others as well as fishermen. Thus the stock company, receiving a substantial share of the profit, may be largely or even entirely in the hands of non-fishermen. 23/ In the deep-sea operations the boat owner is in many cases a company.

Japanese fishermen are organized into various types of organizations -- societies and cooperatives; details concerning these are given on pages 172 - 177.

Legislation regulating conditions of work in fishing was almost non-existent in 1933 and no recent information is available concerning this aspect. 24/

22/ In 1930 the percentage was 10 percent of the profit.

23/ The Economic Development of the Fishing Industry. Published by the Tokyo Association for Liberty of Trading, Bulletin No. 7, 1935.

24/ Industrial Labour in Japan, I. L. O. Studies and Reports, Series A, Geneva, 1933.

Fishing Boats

Number and Type. Official Japanese statistics place the total number of fishing boats at about 355,000 in recent years of which almost 80 percent were non-powered (Table 6). ^{25/} Of the 279,000 boats without engines in 1940 about 98 percent were less than 5 tons; thus of the total number, 77 percent were sailing or other non-powered boats under 5 tons. Most of these small boats are typical Japanese "isaribune" built of wood, flat-bottomed and propelled by means of sculls and sails. Although the preponderance of non-powered boats is clear, in the past fifteen years small boats without engines have been on the decline and those with engines have shown a noticeable increase. Even in the 5-year period 1936 through 1940 the number of non-powered boats decreased by more than 25,000 and the number of powered boats increased by more than 12,000 (Table 6). The rate of building and scrapping of fishing boats is indicated in Table 7.

In 1935 there were 2,752 boats of more than 20 tons of which 2,622 were motor-powered, 86 steam powered and 43 sailing vessels. According to statistics of the Fishing Vessel Owners Association, fishing craft of more than 100 tons numbered 293 in 1936 and 372 in 1939. These include trawlers, cold storage transport ships, bonito and tuna boats, floating factory ships, whalers, and government training and experimental patrol

^{25/} Some sources place the total number of fishing vessels as 450,000. This higher figure must include unregistered small plank canoes, rafts and dugouts still common in the more backward coastal villages. (This figure is given in Table 9).

TABLE F

Number of Fishing Craft by Type, 1936 - 1940

	<u>1936</u>	<u>1937</u>	<u>1938</u>	<u>1939</u>	<u>1940</u> ^{a/}
Total Number	366,267	364,260	356,482	354,729	354,042
<u>Without Engines</u>	304,098	297,961	288,327	283,090	279,018
Less than 5 tons	296,798	290,734	281,849	276,663	273,032
5 - 10 tons	6,779	6,637	5,982	5,949	5,550
10 - 20 tons	499	568	478	464	417
20 tons or more	22	22	18	14	19
<u>With Engines</u>	62,169	66,299	68,155	71,639	75,024
<u>Steam Engines</u>	106	97	194	123	
Less than 50 tons	24	3	98	39	80
50 - 100 tons	10	1	5	(84	(93
100 tons or more	72	93	91	((
<u>Oil Engines</u>	62,063	66,202	67,961	71,516	
Less than 5 tons	44,774	48,105	50,111	((
5 - 10 tons	6,999	7,198	7,568	(68,411	(71,885
10 - 20 tons	7,454	7,804	7,346	((
20 - 50 tons	2,117	2,295	2,105	{ 3,105	{ 3,139
50 tons or more	719	802	831	{	{

Source: Official figures of Ministry of Agriculture and Forestry. 1935 and 1936 figures from The Statistical Abstract of the Ministry of Agriculture and Forestry, 1937 and 1938 figures from The Japan Yearbook, 1940-1 and 1939 and 1940 figures from Toyo Keizai Nenkan, 1943.

^{a/} Figures for 1940 as in source. They do not add to the total given.

TABLE 7

Number of Fishing Craft

	Without Engines		With Engines	
	Newly Built	Scrapped	Newly Built	Scrapped
1934	17,880	21,683	6,275	3,799
1935	17,247	18,699	6,413	3,571
1936	14,358	17,645	6,691	3,631
1937	11,385	14,959	5,530	3,326
1938	8,691	13,509	4,624	3,180
1939	8,524	12,144	4,200	3,023
		Total		Total
		311,553		53,029
		308,541		57,478
		304,098		62,169
		297,961		66,299
		288,327		68,155
		283,090		71,639

Sources: Norinsbo Tokelhyo, 1939; Japan-Manchukuo Yearbook, 1940.

vessels (Table 8). These larger vessels may be described briefly by type: 26/

Trawlers. In 1937 there were 94 licensed trawlers, including those engaged in operations in foreign waters. Most of these were vessels of 200 - 600 tons, Diesel powered, with motor driven winches, freezing and cold storage facilities. The size of these by operating areas is indicated by the following data. 27/

<u>Operation Area</u>	<u>Number of Craft</u>	<u>Total Tonnage</u>	<u>Average Tonnage per Craft</u>
Eastern coast of China and Yellow Sea	68	18,726	275
Southern China Seas	18	9,495	527
Bering Sea	3	1,217	405
Australian waters	3	1,419	473
Mexican waters	2	1,062	531

Small type trawlers. Only the larger boats of this type are 100 tons, some being as small as 20 tons. Most of these vessels have hand-manipulated drag nets and are provided with refrigeration facilities.

Cold storage transport ships. The number of this class of vessels is not known although one estimate places it as 27 (Table 8). The Nichiro Gyogyo K. K. had 10 refrigerator vessels operating in northern waters freezing freshly-caught salmon and salmon-trout.

26/ Further details and pictures of fishing vessels are given in Office of Strategic Services typed report "The Fishing Industry of Japan," 1942.

27/ Japan Fisheries Industry 1939 (Special Issue of Japan Times and Mail, 1939).

TABLE 8

Number and Tonnage of Large Japanese
Fishing Vessels, 1939

<u>Type of Vessel</u>	<u>Number</u>	<u>Aggregate Tonnage</u>
Government ships	38	9,785
Trawlers	82	25,238
Tuna and mackerel boats	122	16,358
Whaling floating factory ships	6	100,370
Whale catcher boats	70	18,116
Crab and salmon floating canneries	18	59,209
Fish transport ships	27	39,226
Fishing boats owned abroad by Japanese private concerns	<u>9</u>	<u>3,886</u>
Total	372	272,188

Source: Civil Affairs Guide -- Japan -- Resources (6).

Bonito and tuna vessels. These are Diesel-engined vessels some of which are smaller than 100 tons but others being from 100 - 200 tons. They are equipped with livebait compartments and cold storage facilities. They are seaworthy vessels, many of all-steel construction, with cruising radii up to 2,000 miles.

Floating factory ships. In 1939 there were reported to be 19 floating factory ships aggregating 64,000 tons which were employed in the salmon and crab fisheries. Although these average about 3,400 tons some are as large as 8,000 tons. They each have a number of smaller auxiliary ships; some have but three or four such auxiliaries, but the larger factories have 10 or 12.

Whaling ships. In 1939 there were six large Japanese whaling factory vessels operating in the Antarctic with 49 catcher boats. The whalers averaged about 16,700 tons and the catcher boats about 350 tons.

The whaling ships operating in coastal and colonial waters are smaller but modern vessels -- typically 100 - 120 tons of the Norwegian type.

Government vessels. The government of Japan and the governments of the various prefectures have training vessels, oceanographic research vessels and patrol craft. These are modern vessels, most of them from 300 to 500 tons in size.

Distribution. Table 9 shows the general distribution of all Japanese vessels. Of the deep-sea vessels more than 8800 were operating off Japan proper. These vessels totaled about 212,000 tons or an average of little more than 20 tons.

TABLE 9

Distribution of Japanese Vessels, 1938

Coastal fishery, home waters	ca. 440,000
Deep-sea fishery	10,000
Home waters	8,836
Korean waters	ca. 1,000
Formosan waters	26
Kwangtung Leased Territory	146
South Seas area (Nanyo)	191
West-central Pacific whalers	30
Antarctic whalers (mother ships only)	6
Soviet waters	132
Floating canneries	15

Source: Japan Yearbook, 1940.

Data concerning the distribution of fishing boats by prefectures is presented in Table 5; unfortunately this regional breakdown by type and size of boats is not available. Hokkaido leads in total number with more than 58,000 boats in 1937 and Nagasaki, Chiba, Ehime and Yamaguchi prefectures each had more than 15,000 fishing boats in that year.

Fishing Ports

The coasts of Japan are thickly strewn with small fishing villages, many of them combination agricultural-fishing villages. These are the true fishing ports of Japan at which about 50 percent of the total catch is landed. In the parts of the country which have been long settled (Honshu, Kyushu and Shikoku) the distribution of these "ports" is closely related to the location of economically valuable coastal fisheries. In these three main islands no coastal area adjacent to good fishing grounds lacks fishing villages; even the most inhospitable stretch of coast has settlements proclaiming their trade by the fishing smacks ("isaribune") drawn up over the sloping rocky shore. These conditions, however, do not prevail in the northern areas (Hokkaido and Karafuto) which were settled intensively only after the middle of the last century.

Although the fishing products of the coastal waters enter Japan through a thousand or more villages, the deep-sea fleets are based on a few leading harbors. These bases are concentrated in three areas:

(1) in Hokkaido, the base-area for the northern fisheries of the Okhotsk Sea and the Kurile-Kamchatka area; (2) in east-central Honshu the base area for the northern part of the great Scombroid range of the warmer Pacific waters; and (3) Kyushu, the base area for the Yellow Sea and the East China Sea trawl fisheries.

The important fishing ports of Japan are shown in Figure 7 and listed in Table 10 by prefecture. It should be noted, however, that many of the productive coastal areas are unrepresented here because their "ports" are merely small villages on bays and protected beaches. Of the ports shown on the map the following four can be regarded as the chief ports: Hakodate, Choshi, Shimonoseki and Nagasaki. Only Choshi, which supplies the metropolitan area of Tokyo, can be described as a "fishing harbor" in the fullest sense of the word. Tokyo, Nagoya, Osaka and Kobe, the large commercial ports of Japan, are important to the fisheries as destinations for aquatic products and as transshipment points rather than as fishing ports.

Even in the more important fishery villages, wharves, docks and piers are the exception. Where they do exist, however, they are nearly all of well-constructed masonry. Only in the northern ports of Hokkaido and Karafuto are there the soon-dilapidated piers of piling, weather-beaten timber docks, and wooden sheds reminiscent of New England or British Columbia fishing villages.

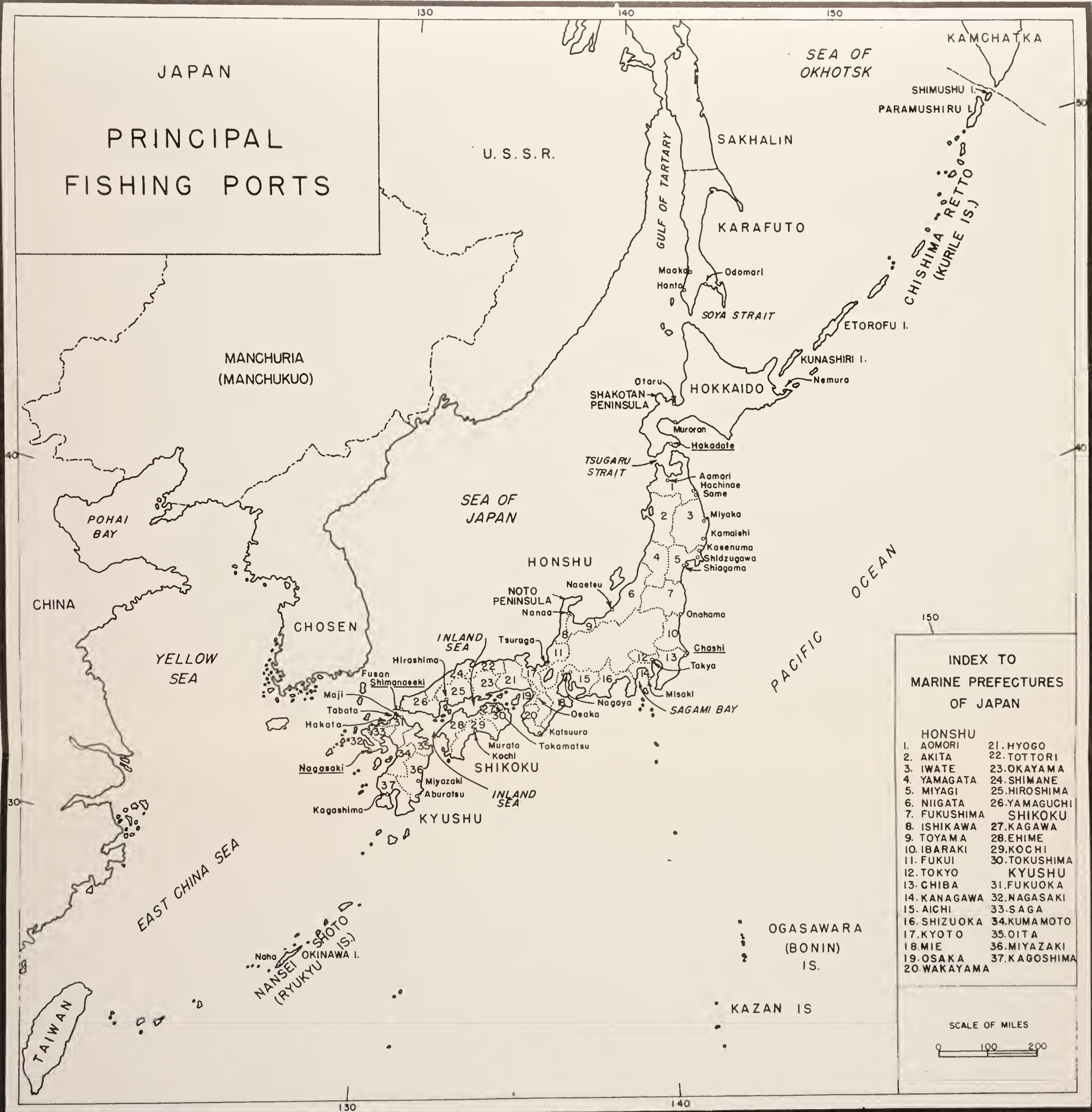


TABLE 10

Important Fishing Ports by Districts ^{a/}

<u>Karafuto</u>	<u>Honshu (continued)</u>
Maoka	<u>Kanagawa Prefecture</u>
Honto	Misaki
Otomari	<u>Aichi Prefecture</u>
	Nagoya
<u>Hokkaido b/</u>	<u>Shizuoka Prefecture</u>
Nemuro	Shimizu
Otaru <u>c/</u>	<u>Osaka Prefecture</u>
Muroran	Osaka
Hakodate <u>c/</u>	<u>Wakayama Prefecture</u>
	Katsuura
<u>Honshu</u>	<u>Hiroshima Prefecture</u>
<u>Aomori Prefecture</u>	Hiroshima
Aomori	<u>Yamaguchi Prefecture</u>
Hachinoe	Shimonoseki <u>d/</u>
Same	
<u>Iwate Prefecture</u>	<u>Shikoku</u>
Miyako	<u>Kagawa Prefecture</u>
Kamaishi	Takamatsu
<u>Miyagi Prefecture</u>	<u>Kochi Prefecture</u>
Kasenuma	Kochi
Shizugawa	Muroto
Shiogama	
<u>Niigata Prefecture</u>	<u>Kyushu</u>
Naoetsu	<u>Fukuoka Prefecture</u>
<u>Fukushima Prefecture</u>	Moji
Onahama	Tobata
<u>Ishikawa Prefecture</u>	Hakata <u>d/</u>
Nanao	<u>Nagasaki Prefecture</u>
<u>Fukui Prefecture</u>	Nagasaki <u>d/</u>
Tsuruga	<u>Miyazaki Prefecture</u>
<u>Tokyo Prefecture</u>	Miyazaki
Tokyo	Aburatsu
<u>Chiba Prefecture</u>	<u>Kagoshima Prefecture</u>
Choshi	Kagoshima
	<u>Loochoo Islands (Ryukyu Islands)</u>
	<u>Okinawa</u>
	Naha

a/ These ports listed here from north to south are shown in Figure 7.

b/ Lesser ports of Hokkaido are Kushiro, Abashiri, Rumoe, Iwanai, Kiritappu, Suttu, Esahi and Urakawa.

c/ Chief ports for operation of northern fisheries.

d/ Chief ports for trawling operations.

Production by Region

Table 11 gives the 1939 regional production of the fisheries of Japan proper, i.e. the amount landed in each prefecture from coastal fisheries and "deep-sea fishing in home waters". The production of the northern fisheries, trawling, fishing in colonial waters and aquiculture are not included. This table, providing regional production data, is the basis for later consideration of surplus and deficit areas.

Although fishing is widespread throughout Japan, three districts stand out as major producing areas: Hokkaido; the eastern coast of Honshu northward from Shizuoka Prefecture; and the west side of Kyushu and extreme southwestern Honshu (including Nagasaki and Yamaguchi prefectures).

Coastal Fishing.

General. Coastal fishing, largely in waters within 20 - 30 miles of shore, accounted for more than 2 million tons or two-thirds of the total production of fish, shellfish, crustaceans and molluscs of Japan proper in recent prewar years. It also provided most of the seaweed produced -- about 410,000 metric tons (Table 12).

Sardines constituted approximately half of the coastal fish catch with mackerel, herring, trout, cod, dog salmon, tuna, horse mackerel, flatfish, yellowtail, bonito, shark, red sea bream and grey mullet each providing sizable portions of the total (Tables 12 and 13).

TABLE 11

Production of Fish, Shellfish and Crustaceans by Regions,
1939 a/

(metric tons)

<u>Regions and Prefectures</u>	<u>Coastal Fisheries</u>	<u>Deep-Sea Fisheries</u>	<u>Total</u>
Hokkaido	838,635	156,246	994,881
<u>Tohoku</u>			
Aomori	92,738	15,717	108,455
Akita	8,155	2,171	10,326
Iwate	78,217	20,586	98,803
Yamagata	2,963	3,848	6,811
Miyagi	23,488	50,280	73,768
Fukushima	24,309	72,566	96,875
Total Tohoku	229,870	165,168	395,038
<u>Kanto</u>			
Niigata	23,257	2,724	25,981
Tochigi	458	—	458
Ibaraki	63,606	5,478	69,084
Chiba	36,160	145,001	181,161
Gunma	215	—	215
Saitama	330	—	330
Tokyo	17,014	348	17,362
Kanagawa	20,664	3,567	24,231
Yamanashi	147	—	147
Nagano	1,069	—	1,069
Total Kanto	162,920	157,118	320,038
<u>Tokaido</u>			
Shizuoka	56,411	38,797	95,208
Aichi	22,253	893	23,146
Mie	31,013	17,720	48,733
Gifu	1,044	—	1,044
Toyama	38,669	119	38,788
Ishikawa	55,216	2,122	57,338
Total Tokaido	204,606	59,651	264,257

TABLE 11 (Continued)

Production of Fish, Shellfish and Crustaceans by Regions,
1939 a/
(metric tons)

<u>Regions and Prefectures</u>	<u>Coastal Fisheries</u>	<u>Deep-Sea Fisheries</u>	<u>Total</u>
<u>Kinki</u>			
Shiga	4,494	—	4,494
Fukui	22,465	592	23,057
Kyoto	25,836	422	26,258
Nara	186	—	186
Wakayama	18,686	4,060	22,746
Osaka	9,414	—	9,414
Hyogo	34,243	5,660	39,903
Total Kinki	115,324	10,734	126,058
<u>Chugoku</u>			
Tottori	8,841	845	9,686
Okayama	10,318	18	10,336
Shimane	25,013	12,477	37,490
Hiroshima	16,736	—	16,736
Yamaguchi	50,051	51,827	101,878
Total Chugoku	110,959	65,167	176,126
<u>Shikoku</u>			
Kagawa	8,616	1,671	10,287
Tokushima	15,899	3,354	19,253
Ehime	57,414	2,347	59,761
Kochi	28,113	11,890	40,003
Total Shikoku	110,042	19,262	129,304
<u>Kyushu</u>			
Nagasaki	169,281	45,985	215,266
Saga	16,425	8,467	24,892
Fukuoka	29,265	59,153	88,418
Oita	20,161	337	20,498
Kumamoto	14,667	1,108	15,775
Miyazaki	18,569	9,133	27,702
Kagoshima	42,603	22,657	65,260
Total Kyushu	310,971	146,840	457,811
<u>Okinawa</u>	2,785	4,330	7,115
TOTAL JAPAN PROPER	2,086,112	784,516	2,870,628

Source: Norinsho Tokeihyo, 1939.

a/ Includes only production of coastal fisheries and deep-sea fisheries in "home waters". For aquiculture only value figures are available (Table 15). Seaweed is not included in the coastal production.

TABLE 12

Japanese Coastal Fishing Catch, 1934 - 1940

Quantity (1,000 kan)

Year ending March 31:	GRAND TOTAL	Wet Fish						Shellfish	Crustaceans and Molluscs			Seaweed
		Total	Sardine	Herring	Mackerel	Tuna	Salmon ^a / Bream		Total	Cuttlefish	Other	
1934	867,927	593,913	340,831	203,181	18,132	5,896	7,029	3,228	50,794	26,246	24,548	175,211
1935	737,449	514,456	292,023	61,169	19,479	9,136	7,919	3,137	36,310	10,967	25,343	132,141
1936	782,032	571,592	347,283	38,122	22,611	9,009	17,703	3,231	42,133	18,960	23,173	128,685
1937	726,729	494,485	268,164	30,953	26,193	6,712	17,225	3,097	40,875	14,282	26,593	153,725
1938	696,862	449,431	250,284	11,578	27,437	4,646	19,411	2,969	56,437	28,230	28,207	109,824
1939	659,957	465,246	231,589	32,682	34,456	9,220	13,390	2,918	60,874	33,826	27,048	103,660
1940	667,549	403,013	173,091	49,364	21,306	11,511	12,572	3,048	60,585	35,619	24,966	157,085
Value (1,000 yen)												
1934	173,137	128,143	26,314	7,157	5,830	4,992	4,690	9,685	25,617	10,277	15,340	9,283
1935	181,802	134,672	28,258	5,077	6,597	6,163	4,995	9,786	25,260	7,734	17,526	10,173
1936	212,648	159,764	40,958	4,381	8,407	7,165	9,155	10,200	29,373	12,030	17,343	12,308
1937	219,649	162,844	37,894	5,507	8,938	6,358	11,816	10,583	31,426	11,543	19,883	14,927
1938	248,895	179,908	42,363	2,674	10,892	6,175	13,034	11,609	43,934	19,827	24,107	14,332
1939	378,431	262,026	62,978	7,955	16,388	14,668	13,431	15,248	72,953	39,928	33,025	27,304
1940	488,300	333,209	74,767	15,597	20,440	24,154	16,526	20,039	86,601	45,136	41,475	38,884

^a/ Largely dog or chum salmon.Source: Toyo Keizai Nenkan, 1943.

TABLE 13

Production of Coastal Fisheries, 1938 - 1939 a/

<u>Fish</u>	<u>Quantity</u> (1000 kan)	<u>Value</u> (1000 yen)
Sardines	231,589	62,978
Mackerel	34,456	16,388
Herring	32,682	7,955
Trout	27,753	12,876
Cod	25,180	9,417
Dog salmon	13,390	13,431
Tuna	9,220	14,668
Horse mackerel	8,362	9,368
Flatfish	6,248	8,731
Yellowtail	5,982	11,667
Bonito	3,802	4,072
Shark	3,689	1,663
Red sea bream	2,918	15,248
Grey mullet	2,594	4,355
Others	<u>57,381</u>	<u>69,209</u>
Total	465,246	262,026
<u>Shellfish</u>	30,177	16,148
<u>Crustaceans and Molluscs</u>		
Cuttlefish	33,826	39,928
Crab	7,261	3,164
Octopus	6,314	7,953
Prawn and shrimp	4,570	12,096
Other	<u>8,902</u>	<u>9,812</u>
Total	60,873	72,953
<u>Seaweeds</u>	103,660	27,304
Grand Total	659,956	378,431

Source: Norinsho Tokeihyo, 1939.a/ This table is included in addition to Table 12 as it gives production for several additional species.

Coastal fishing was characterized by small-scale operations with limited capital. Many of the fishermen were farmers who took to the sea only in slack seasons or fishing was the principal occupation of the father of the farm family while the wife and children tilled the soil. The entire coast of Japan was thickly strewn with little combination agricultural-fishing villages; two-fifths of these villages total earnings from fishing were more than half the earnings from farming.^{28/} Much of the coastal fishing consisted of very small units of operation, frequently involving a single family or several families.

Although coastal fishing was important along all sections of the coast of Japan proper its greatest relative importance was in Hokkaido. This large northern prefecture accounted for about 40 percent of the total volume of the coastal catch, due in part to its position in relation to converging currents and to its disproportionately long coastline as compared with other prefectures. Other regions of high production were the Pacific coastal waters of northern Honshu and along the western coast of Kyushu.

The fishing grounds in coastal waters were operated under a license system. For the purpose of licensing the fishing village was considered as a legal entity, each village being given exclusive rights to the waters along its shores. Most villages had their own fishing

^{28/} Fritz Bartz, "Japans Seefischereien," in Petermanns Geographische Mitteilungen, 86 (May 1940).

organizations which enter into all phases of the economic life of the fishermen (see pages 172-177).

The coastal waters have been worked intensively for a long period of time. Gradual depletion has been reported, and locally special restrictions have been imposed in order to prevent further diminution of these resources. The coastal waters of Hokkaido and northern Honshu are considered less depleted than those of other parts of Japan proper.

Methods and Gear of Coastal Fisheries. Japan's coastal fishing industry in immediate prewar years was a curious combination of old, time-honored indigenous methods and some of the most modern methods and equipment used anywhere in the world. Although the deep-sea techniques and much of the gear employed in the northern fisheries generally paralleled those of Western countries, included in the large assortment of gear used in the coastal fisheries were nets and traps of types unfamiliar in the United States and Europe. The complexity of techniques in the coastal fisheries was greatest in southern Japan. Here long settlement had permitted the development of a multiplicity of devices for specialized purposes and there was also a greater number of species than in the northern waters and fewer of the migratory types which could be secured in great masses by relatively simple procedures.

It is not possible in all cases to clearly draw the line between the methods of coastal fishing and those of the deep sea, but the

following pages describe some of the more important methods and gear used in the fisheries of the coastal waters, i.e. within 20 to 30 miles of the shores of Japan proper. 29/ Some of these same methods, purse-seining and gill-netting, for example, were used farther from shore.

Japanese fishing gear falls into two general categories, both of which were used in the coastal fisheries: (1) nets, including traps; and (2) hook and line. Japanese nets, in turn, may be considered as of seven general types:

1. scoop or dip-nets, designed to scoop or dip fish from the water.
2. casting nets, designed to spread out over fish, capturing them as the weighted bottom is pulled together.
3. laying nets, designed to catch fish by laying a net beneath fish, collecting them upon the net as it is lifted.
4. dragging nets (haul-seines) operated either from shore or from boats.
5. trap or pound nets devised so as to entrap fish. The greatest yield of the coastal fisheries probably came from these.
6. enveloping or encircling nets by which fish are enveloped.
7. entangling nets spread across the path of fish so as to catch them by entangling them in meshes.

29/ Many of the details for such operations are unfortunately sketchy or lacking. It should be recognized that there are numerous variations of the gear described here.

Each of these general types had numerous varieties according to the species sought, the locality and, in some cases, according to the season of operation. Hook and line fishing, less important in total production than net fishing consisted of simple angling (not used extensively in coastal waters), hand trawls and line trawls.

In connection with the operations for the various species numerous devices were used to bring fish to a desired spot. These included lighting, baiting, sheltering and helping spawning. Lighting by means of oil, gas or electricity was used especially in the sardine, mackerel and squid fisheries. Baiting, using either real or false bait, was a common practice. By providing artificial shelter, by protecting their natural refuge, and by aiding spawning through the provision of shrubs, fish were assembled in places convenient for their capture.

Another characteristic of the Japanese coastal fisheries, which is brought out in the succeeding descriptions, perhaps needs emphasis. The crews of the boats of the coastal fisheries were disproportionately large; eight men were quite common in a small boat and 12 to 30 in ones slightly larger.

Sardines. There were many methods used to catch sardines. Nets used were encircling nets, entangling nets, dragging nets, trap nets, laying nets, casting nets and scoop nets - i.e. nets of all seven general types.

The encircling nets, of which the purse seine was the most important, were operated on a large scale for catching vast schools of fish. With the increase in motor boats the use of these nets became easier and more popular so that they were in recent years the principal nets used in the deeper waters for sardines. Of the numerous varieties of the Japanese purse seines the dimensions of two are given here. One type about 800 feet long and 180 feet deep was carried by two boats 6 - 8 feet in beam manned by 20 to 30 or more men. Another 1,200 feet in length and 120 feet deep was handled by 30 or more fishermen in two boats of about eight feet in beam.

The drift net was simple and could be operated with relatively small capital investment. One type consisted of 15 smaller nets (each about 80 feet long) stitched together to make a length of 1,200 feet. The net was cast across the current by men in several small boats and was generally left drifting from sunset until the following morning.

The drag net (haul seine) was the principal means used in earlier years, but gradually had fallen into relative disuse as it could be operated only when the fish came close to shore. One type consisted of a large pocket 180 feet long and 180 feet in circumference and two wings, each about 1,500 feet long. Two boats manned by 30 men carried the net and when a sardine school was surrounded by it, the boats hauled the seine toward the shore where the fish were finally caught by being driven into the pocket as the wings were gradually drawn to the land.

Bottom laying nets 60 feet square laid flat in fairly shallow water were also used for sardines. As soon as the fish were collected in sufficient numbers over the net, it was rapidly lifted from all sides by the combined crews of 4 - 8 boats.

Traps or pound nets were used at points near the shore to trap schools of sardines; these frequently took enormous catches, but the in-shore nature made for years of plentiful production alternating with years of low production.

Herring were caught principally by trap or pound nets, encircling nets, haul seines and gill nets. A square shaped net called kaku-ami consisting of a main net and a fence net was the most commonly used trap net. The main net was about 420 feet long, 60 feet wide and 60 feet deep, and the fence net about 700 feet long. The trap was set near the shore with the fence net spread out so as to guide the fish toward the trap. Also used was another type of trap net called yukinari-ami.

One type of gill net consisted of 30 or more sets of nets 18 feet long and 45 feet deep stitched together. This net was cast by either a single boat or several small ones working in cooperation.

Salmon were taken along the coast by haul seines, trap nets and gill nets. One type of haul seine is reported as 3,000 feet long, and a kaku-ami trap net is reported to consist of a main net about 400 feet long and a fence net of more than 700 feet.

Cod were taken from boats by hand lines and trawl lines. Hand lines of more than 500 feet in length, bearing two hooks baited with herring or mackerel, were still used in immediate prewar years but trawl lines were more common. The trawl lines consisted of trunk lines about 1,200 feet long to which short lines were attached at the ends of which were hooks. A trunk line with 100 or more hooks made a "basket" and each boat carried 14 to 15 such baskets. Herring, sardines, squid or flounders were used as bait.

For mackerel a purse seine and what is called a "scare-cord seine" were commonly used. A purse seine for mackerel, 3,300 feet long and about 200 feet deep, was cast by two boats while one or two other boats assisted in surrounding the school; about 50 men were required. One of the scare-cord seines used, consisting of a pocket of about 108 feet and two wings each 3,000 feet long, was operated from four boats manned by 50 - 60 men.

Tuna were caught by drift nets, large trap nets, haul seines and purse seines and by trolling as well as by trawl lines and long-line (haenawa) although the latter two of these methods were used primarily beyond what can be called coastal waters.

Drift nets about 30 feet deep and 5,000 feet long were put out in the evening across a current or wind direction in seas 30 - 60 miles offshore.

Tuna pound nets (maguro daibo-ami) with leader nets of 700 - 800 feet were set so as to capture tuna.

One type of purse seine used for tuna consisted of a 60 foot pocket and wings of 2,500 feet of strong net. Several boats with about 60 fishermen operated this net. This type of net was used for tuna off Miyagi and Kanagawa prefectures.

Trawl lines about 1,400 feet long were used for tuna from boats with 10 or more fishermen to a boat.

Yellowtail were caught by numerous methods, varying according to the locality and season, but most commonly used were the large trap nets called ojiki-ami. Gill-nets, Japanese trawls, trawl lines and hand lines are also used.

The trap net used for this species consisted of a main net about 1,000 feet long and 600 feet wide at the opening with a leader net varying in length according to the nature of the fishing ground. The trap which was set at a point where the fish were known to pass in their migration was operated in some cases by as many as 12 boats, manned by more than 100 fishermen.

Baiting was commonly used to attract yellowtail for several of the methods.

Tai were taken in coastal waters by scare-cord seines, haul seines, gill nets, laying nets and hand and trawl lines.

The scare-cord seine consisted of a pocket about 100 feet long and two wings each more than 3,000 feet long. In this operation seven boats manned by 60 men were employed: two boats to handle the net, two boats to scare the fish into the net, two anchor boats and a look-out boat. The boats went out to the fishing grounds before dawn, the scare boats

cast the scare cord about 120 feet deep and by dragging it over the bottom drove the tai into the net which was cast in a circle by the boats. The fish were then driven into the pocket and caught.

Other species. Flounder and other flat fish were caught by gill nets, the Japanese trawl, hand trawl and trawl lines. Squid were caught by lines to which special gigs in the shape of false bait were attached. This fishing was done at night, at first catching squid in quite deep water but as the evening advances and the lights brighten catching them closer to the surface. Sharks, abundant along the Japanese coast, were taken by gill nets and trawl lines. Crabs were taken by gill nets cast 8 - 12 miles from shore and also by trawl lines. Lobsters were taken chiefly by gill nets, but the Japanese trawl and hand trawls were used for shrimps and prawns. The gill net used for the spiny lobster consisting of three sections (each about 60 feet long and 25 feet deep with four inch mesh) fastened together was cast by a boat manned by 2 - 3 fishermen in the evening and hauled the following morning. Abalone which cling to rocks at depths of 12 to 120 feet were taken by "lancing" them from the rock by means of a long spade or by a small iron implement used by divers. Seaweed was gathered by various dragged hooks.

Aquiculture.

General. About 120,000 metric tons of edible fish and shellfish, 35,000 metric tons of seaweed and smaller amounts of other products (goldfish, pearls and pearl shell) were produced annually in the immediate prewar period by aquiculture, an occupation in which more than 150,000 persons were engaged either part or full time from 1934 through

1937 (Table 4). From 141,000 to more than 162,000 places were reported in operation (Table 14).

TABLE 14

Number of Establishments Engaged in Aquiculture,
Area and Value of Products

	<u>Number of Establishments</u>	<u>Area</u> (tsubo) <u>a/</u>	<u>Value of Product</u> (yen)
1935	161,779	157,761,107	25,534,550
1936	162,326	154,930,254	25,551,596
1937	159,038	149,314,974	28,974,262
1938	158,629	151,201,913	30,110,429
1939	141,000	141,352,000	43,026,000

Source: Japan-Manchukuo Yearbook, 1940; Far East Yearbook, 1941.

a/ A tsubo equals 3.95 square yards.

The more important items produced were carp, eel, ayu and trout; various edible shellfish (particularly asari and oysters); seaweed (chiefly *Porphyra* species); goldfish; pearl oysters and pearl shell (Table 15). Tokyo, Shizuoka, Aichi, Mie, Chiba and Hiroshima prefectures were the largest producers, each having a yield valued at more than a million yen in 1937 (Table 16).

Carp Culture. The annual production of carp was about 11,000 - 12,500 metric tons; in 1940 the production, lower than in other recent years, was 10,504 tons (Table 15). Carp were raised in rearing ponds, ricefields and in reservoirs, lakes and rivers; in 1936 almost 150,000 places were raising carp. Shiga, Miyazaki, Niigata, Gifu and Akita were important in this production as suggested by the large number of hatcheries (Table 17). Chiba and Gumma prefectures were also large

TABLE 15

Production of Japanese Aquiculture, 1936 - 1940
(Quantity in 1,000 kan; value in 1,000 yen)

	1936		1937		1938		1939		1940	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Carp:										
Ricefields	509	683	497	706	418	685	n.a.	n.a.	n.a.	n.a.
Breeding-ponds	1,607	2,203	1,612	2,345	1,525	2,551				
Reservoirs, marshes, etc.	1,257	1,629	1,250	1,973	1,033	1,820				
Total	3,373	4,515	3,359	5,024	2,976	5,056	3,007	7,413	2,801	8,559
Eel:										
Breeding ponds	1,809	4,931	1,864	5,019	1,919	6,549	n.a.	n.a.	n.a.	n.a.
Reservoirs, marshes, etc.	35	82	27	74	30	88				
Total	1,844	5,013	1,891	5,093	1,949	6,637	2,034	9,230	2,012	10,984
Goldfish	555	581	554	667	386	531	n.a.	n.a.	n.a.	n.a.
Oyster	15,741	1,858	14,949	2,023	12,145	1,961	11,085	3,290	12,357	3,754
Asari	11,359	890	16,460	1,274	13,805	1,803	14,689	3,319	15,953	3,066
Pearl ^{a/}	7,072	984	10,858	1,544	10,884	1,376	66,856	2,869	31,850	2,116
Pearl shells ^{a/}	36,216	905	29,790	870	24,936	407				
Ananori (Porphyra)	8,410	8,566	9,346	9,988	8,233	9,365	n.a.	n.a.	n.a.	n.a.
Others	n.a.	2,240	n.a.	2,491	n.a.	2,974	n.a.	n.a.	n.a.	n.a.
Total Value		25,552		28,974		30,110		43,026		46,774

Source: Data for 1936 - 1938 from Orient Yearbook, 1940; 1939 and 1940 data from Toyo Keizai Nenkan, 1943.

^{a/} Quantity given in thousands of shells.

TABLE 16

Value of Aquiculture by Prefectures, 1937
(1,000 yen)

Hokkaido	107	Kyoto	132
Aomori	26	Osaka	306
Iwate	237	Hyogo	181
Miyagi	656	Nara	579
Aki ta	138	Wakayama	107
Yamagata	271	Tottori	58
Fukushima	136	Shimane	55
Ibaraki	94	Okayama	141
Tochigi	57	Hiroshima	1,070
Gumma	328	Yamaguchi	245
Saitama	60	Tokushima	52
Chiba	1,546	Kagawa	68
Tokyo	4,861	Ehime	84
Kanagawa	815	Kochi	170
Niigata	258	Fukuoka	461
Toyama	64	Saga	500
Ishikawa	61	Nagasaki	399
Fukui	16	Kumamoto	495
Yamanashi	94	Oita	180
Nagano	619	Miyazaki	95
Gifu	187	Kagoshima	47
Shizuoka	3,570	Okinawa	23
Aichi	3,051		
Mie	2,538	Total	25,553
Shiga	315		

Source: Nippon Suisan Nempo, 1938.

producers, but carp was raised in all prefectures excepting in northern Honshu and Hokkaido where it is too cold for this species.

TABLE 17

Number of Carp Rearing Hatcheries

<u>Prefecture</u>	<u>Number of Hatcheries</u>
Shiga	250
Miyazaki	240
Niigata	185
Gifu	155
Akita	135
Shizuoka	75
Yamagata	50

Source: Japan's Fisheries Industry 1939 (Special issue of Japan Times and Mail, 1939).

In raising carp in rice fields young fish about two centimeters long were liberated about the end of June (shortly after rice planting) and were 10 - 15 centimeters long when gathered at the end of September (just prior to the removal of water from the paddy fields). Two-year old carp about 15 centimeters long and 100 grams in weight when liberated grew to about 32 centimeters and 500 grams by late September. Although the fish fed mainly on natural feed (chiefly water fleas) some prepared feed (silkworm chrysalises) was generally provided.

Carp were reared in ponds by two methods -- calm water and running water, of which the latter conducted most extensively in Gumma Prefecture was considered somewhat better.

Among the larger lakes in which carp were raised were Lake Kasumigaura, Lake Suwa, Lake Chuzenji and Lake Biwa (at the southern end where the water is sufficiently warm).

Eel Culture. About 7,500 metric tons of eels were produced annually chiefly in Shizuoka, Aichi and Mie prefectures. Shizuoka Prefecture is reported to have produced about 60 percent of the total and Aichi Prefecture about 25 percent. Although the industry was conducted mainly along bays (as in Shizuoka Prefecture), eels were also raised in ponds, reservoirs, lakes and swamps. In 1937 there were 1,370 eel-rearing farms with more than 1,400 hectares of ponds and eels were also raised at 131,000 places on swamps, and in reservoirs having a total area of 1,900 hectares. Among the lakes producing eels were Lake Biwa, Lake Chuzenji, Lake Towado and Lake Kasumigaura.

For this production young eels were secured either by catching them when they weighed about 20 grams along the ocean coast (particularly the Pacific coast of Kyushu) or by capturing them when they were very small (.13 to .2 grams) as they ascended rivers during the winter months. In the latter case the baby eels were reared in special ponds until they reached about 15 grams. Eels were fed raw sardines and silkworm crysalises.

Other Fish Culture. Ayu, salmon, trout and grey mullet were among the other edible fish produced in considerable quantities by aquiculture.

Ayu (Plecoglossus altivelis), a small fresh-water fish somewhat similar to the trout, is among the most prized fish for eating in the Orient. It is widely distributed in the rivers of Japan and in recent years has been cultivated. In 1938 there were more than a hundred commercial rearing ponds for this species. Young ayn, about 7 centimeters long and 3.8 grams in weight, were liberated into ponds in April and early

May and after a diet of sardines, powdered silkworm chrysalises and sweet potato flour were gathered when about 12 - 16 centimeters long and 15 - 37 grams in weight.

Several species of trout and salmon (both inland and sea varieties) were reared. A major part of this production was the rearing of spawning adult fish and the hatching of young for the purpose of stocking rivers and lakes. In 1936 there were reported to be 217 hatcheries which produced 106,655,000 individual fish and 361 rearing ponds producing 186,000 kilograms of fish. Hokkaido and Yamagata prefectures had the largest number of trout and salmon hatcheries and rearing ponds although they were numerous throughout northern and central Japan.

Among the lakes in which trout (ame masu) was reared in considerable amounts are Lakes Biwa (Shiga Prefecture), Ashi (Kanagawa Prefecture), Shishaku (Hokkaido), Haruma (Gunma Prefecture), Chuzuji and Nojiri and Kizaki (Nagano Prefecture). Rainbow trout (introduced from the United States in 1877) was stocked in Lake Inawashiro (Fukushima Prefecture) and Lake Towado (Akita-Aomori); river trout (hime masu) was reared in Towado and Chuzuji Lakes.

Aquiculture in lakes and large marshes (not only trout and salmon but also other species including eel, carp and ayu) is in most cases conducted by some government or public organization for public benefits whereas the cultivation of fish in small ponds, reservoirs or rice fields is largely done by private enterprise. Prefectural governments through their fisheries experiment stations, fishery associations, municipalities and villages and fishery unions have all helped in the stocking of lakes

The breeding of ornamental goldfish (a relative of the carp) produced annually 60 million fish valued at ¥ 531,000 - ¥ 667,000. The industry centered largely in Tokyo, Nara and Aichi prefectures.

Shellfish Culture. The ten principal species of shellfish cultivated for food purposes in Japan were:

<u>Japanese Name</u>	<u>Scientific Name</u>	<u>English Name</u>
Hamaguri	<u>Meretrix meretrix</u>	Clam
Asari	<u>Tapes philippinarum</u>	Clam-like
Baka-gai	<u>Mactra sulcataria</u>	Trough-shell
Ho-tate-gai	<u>Pecten yessoensis</u>	Pecten or scallop
Aka-gai	<u>Anadara inflata</u>	Bloody-clam
Hai-gai	<u>Anadara granosa</u>	Bloody-clam like
Mo-gai	<u>Anadara subcrenata</u>	Bloody-clam like
Age-maki	<u>Sinovacula constricta</u>	Razor shell like
Awabi	<u>Haliotis gigantea</u>	Sea-car
Ma-sizimi	<u>Corbicula leana</u>	Corbicula

All except ma-sizimi were reared along shallow sea coasts; it was produced in lakes, rivers and swamps in all parts of Japan except Hokkaido.

Of these asari and hamaguri (clam and "clam like") were reared most extensively, especially asari of which more than 60,000 metric tons were raised in 1937 (Table 15). They were reared in shallow coastal waters, especially in places where the bottom was sandy or slimy and where there was some admixture of fresh water from rivers with the sea water. Among the most important producing areas was Tokyo Bay where 1,200 fishermen were engaged in this industry.

Hotate-gai (scallops) were reared most extensively along the eastern coast of Hokkaido by a procedure similar to that used for oysters. The spats which are free-swimming were collected on old shells suspended in the water of calm bays and later the scallops were transferred to open coastal waters where they continued their development.

Oyster Culture. In the immediate pre-war years 46,000 - 60,000 metric tons of oysters were produced (Table 15). Although several species were raised, magaki (Ostrea gigas) was the main one. The principal centers of production were in Hiroshima, Miyagi, Saga and Shizuoka prefectures although small-scale culture was carried on in nearly all the southern prefectures bordering the Pacific and those bordering the Inland Sea. Hiroshima Prefecture claimed half the total production.

Two methods were used: (1) an older method of planting wiers of bamboo or branches at a height so that at low tide they are exposed above the sea water for the collection of spats; and (2) "the new-hanging method" by which oysters are suspended on floating rafts making it unnecessary to pay attention to the condition of the sea bottom.

Deep-Sea Fisheries.

General. The so-called Japanese "deep-sea fisheries" consist of operations in "home waters" plus trawling, fishing in northern waters, distant tuna and bonito operations and fishing off Korea, Formosa, Kwantung and the Mandated Islands. 30/ Whaling, here included under special fisheries, is also sometimes considered as part of the deep-sea fisheries.

In general, the deep-sea fisheries differ from coastal fishing in several respects. Boats go out much farther from their home bases as operations are either in the deep sea or in shallow waters at

30/ "Deep-sea" fishing is really a misnomer as some of these operations are carried on in shallow water. This classification is used here, however, since there are valid distinctions on the basis of type of operation and since Japanese statistics divide the industry this way.

considerable distance from the homeland. They are larger vessels and the equipment is more expensive; some of the vessels are more than 100 - 200 tons and many are equipped with steam or Diesel engines. Due to the expensive equipment required for it, deep-sea fishing is of rather recent development and is for the most part large-scale enterprise in the hands of companies. Equipment and methods are more standardized than in the coastal fisheries. The catch is landed at fewer ports. The total deep-sea catch, as here considered, amounted to well over a million metric tons in pre-war years divided as in Table 18. *Kanji 19*

In the following pages these fisheries are described but not by groupings which are mutually exclusive. The figures in Table 18, however, do not overlap and therefore provide as accurate a total figure for the production of deep-sea fisheries as can be obtained. These do not include, however, the production of the floating canneries.

Deep-Sea Fisheries in Home Waters. The area of operations in "home waters" is not delimited by the Japanese and may include operations off the Kuriles, the Bonins and Karafuto and bonito and tuna operations at considerable distances as well as fishing directly off Japan proper. This type of fishing may also include the drag net fishing near Japan proper. There is really no clear distinction between these fisheries and some of the coastal fisheries, on the one hand, and some of the other deep-sea operations, on the other hand.

TABLE 18

Production of "Deep-Sea Fisheries," 1936 - 1940
(1,000 kan)

	<u>1936</u>	<u>1937</u>	<u>1938</u>	<u>1939</u>	<u>1940</u>
Home Waters	259,964	229,796	210,255	209,204	211,359
Trawling	13,887	13,380	10,072	9,710	9,002
Northern Fisheries ^{a/}	22,854	21,994	19,190	20,403	13,609
Waters of Korea, Formosa, Kwantung and South Seas Mandated Islands	15,336	12,078	9,619	7,008	n.a.
Total	312,041	277,248	249,136	246,325	n.a.

n.a. - not available.

Source: Compiled from data given in other tables in this report. Data are official Japanese figures.

^{a/} Includes only the salmon production of Soviet waters. Catch data for other northern fisheries are not available.

Tables 19 to 22 summarize the production, the number of vessels and the methods used in deep-sea fishing in home waters in recent years. Production in 1938 was 788,000 metric tons for the operation of more than 8,800 vessels with crews totaling more than 113,000. Sardines made up more than a quarter of the catch by volume and bonito, tuna and cod were taken in large quantities. Landings by volume were largest in Hokkaido, Chiba, Fukushima, Fukuoka, Yamaguchi and Miyagi prefectures. (Table 11).

Tuna and Bonito Fishing constituted one of the important fisheries in "home waters". These fish together accounted for more than 135,000 metric tons annually in prewar years and for them and the species which associate with them, Japan operated modern fishing vessels capable of month-long cruises. 31/ Most of these vessels are 50 - 200 tons, Diesel powered and have arrangements for cold storage.

It is estimated that 1,500 to 2,000 deep-sea boats operated in the tuna and bonito fishery, most of them based upon ports of eastern Japan -- Shizuoka, Miyagi, Mie, Kochi, Oita, Kagoshima, Ibaraki, Wakayama and Miyazaki prefectures.

In the winter months some of the larger boats operated in the southern tropical waters, shifting northward in the spring and summer as these migratory species moved northward. The entire area thus fished was enormous, extending from the South Seas northward through the Bonins

31/ Although the description here speaks only of tuna and bonito, mackerel, spearfish and swordfish, yellowtail and sanna are all taken by somewhat similar operations.

TABLE 19

Production of Deep-Sea Fisheries in Home Waters, 1936 - 1940

	Total Production		Sardine		Bonito		Mackerel		Tuna	
	1,000 kan	1,000 yen	1,000 kan	1,000 yen	1,000 kan	1,000 yen	1,000 kan	1,000 yen	1,000 kan	1,000 yen
1936	259,964	87,483	86,922	7,779	22,881	12,963	10,967	4,321	11,247	11,071
1937	229,796	89,887	53,958	6,977	24,820	13,187	10,211	3,894	9,866	12,340
1938	210,255	110,542	38,889	5,551	27,857	19,514	8,078	3,895	10,654	15,440
1939	209,204	142,557	59,368	12,324	23,004	23,407	6,506	4,701	13,691	21,888
1940	211,359	194,611	57,762	21,700	25,629	36,527	11,233	10,611	11,446	25,127

Source: Toyo Keizai Nenkan, 1943.

TABLE 20

Production of Deep-Sea Fisheries in Home Waters by Species, 1939

	Quantity (1000 kan)	Value (1000 yen)
Sardine	59,368	12,324
Bonito	23,004	23,407
Cod	22,009	8,408
Tuna	13,691	21,888
Shark	13,669	6,565
Flatfish	11,646	11,271
Mackerel	6,506	4,701
Skipper	3,012	2,646
Sea bream	1,716	5,043
Others	54,583	46,304
Total	209,204	142,557

Source: Norinsho Toketihyo, 1939.

TABLE 21

Vessels and Crews Engaged in Deep-Sea Fishing in Home Waters, 1935 - 1938

	Total		Vessels Without Engines		Vessels With Engines	
	Number of Vessels	Tonnage	Number of Vessels	Tonnage	Number of Vessels	Tonnage
1935	8,984	199,069	171	1,321	8,813	197,757
1936	9,885	215,026	240	1,940	9,645	213,086
1937	9,783	221,925	215	1,679	9,568	220,246
1938	8,836	211,968	167	1,370	8,669	210,598
38:						
Circle net	916	15,188	18	111	898	15,077
Deep-sea net	1,732	52,027	10	550	1,722	51,477
Drift net	1,185	20,280	11	44	1,174	20,236
Long line	2,780	63,654	15	73	2,765	63,581
Hand line	618	10,188	112	582	506	9,606
Bonito angling	891	37,192	1	10	890	37,182
Others	714	13,439	--	--	714	13,439
Total	8,836	211,968	167	1,370	8,669	210,598
						111,851

Source: Japan-Manchukuo Yearbook, 1940.

TABLE 22
Production of Deep-Sea Fisheries in Home Waters by Method, 1938

	<u>Sardine</u>	<u>Bonito</u>	<u>Mackerel</u> (1,000 kan)	<u>Tuna</u> (1,000 kan)	<u>Cod</u>	<u>Shark</u>	<u>Tai</u>	<u>Total (including others)</u> (1,000 yen)
Circle net	33,283	16	1,128	102	81	71	-	6,875
Deep-sea net	71	21	336	14	11,201	5,782	2,656	43,623
Drift net ^{a/}	4,646	-	163	90	193	5,079	-	6,621
Long line ^{b/}	-	503	743	8,409	14,146	2,559	626	26,012
Hand line	-	2,085	3,036	87	27	46	15	5,738
Bonito angling	-	25,230	492	829	-	420	-	17,984
Others	949	9	2,179	312	-	109	-	3,688
Total	38,889	27,857	8,078	10,654	25,647	13,627	3,298	110,542

^{a/} Trawl-line.
^{b/} Includes trolling.

Source: Japan-Manchukuo Yearbook, 1940.

to waters east of Japan proper north as far as the Kuriles. 32/ Eastward vessels range 2,000 or more miles from their home ports. The "mingling region" lying along the line of convergence of the Kuroshio and Oyashio, which shifts according to seasons and other factors, was the most productive zone for the pelagic Scombroids. The Japanese who had devoted much scientific study to the natural conditions related to tuna and bonito were unable to predict areas of high productivity. 33/

The chief method used for deep-sea tuna fishing was line-trawling; this accounted for about 80 percent of the deep-sea tuna catch. Bonito was taken largely by rod and line. Purse-seine, drift netting and trolling were used but were distinctly of minor importance (Table 22).

Line-trawling (haenawa) for tuna was similar to American line trawling except for differences in details. Wooden or glass floats were used instead of cork buoys and the line and ganging were kept aboard in baskets rather than in tubs. Approximately 100 "hachis" (baskets of trawl-line) were loaded for 50 - 100 ton vessels and 200 - 300 baskets for the larger 150 - 160 ton vessels. For a vessel of 60 or 60 tons 12 - 14 fishermen were needed; for the larger vessels 25 or more constituted the crew. The lines, baited with cuttlefish, mackerel or sardines, were usually cast at dawn or in the evening. 34/

32/ Tuna which have a wider distribution are taken off Hokkaido and the Kuriles whereas bonito are not taken in quantity north of 42° in the deep seas. The species which accompany tuna and bonito are more diverse and abundant in the southern waters.

33/ Office of Strategic Services typed report, "The Fishing Industry of Japan," June 1942 gives further details including maps, charts and tables concerning area of operation and seasonal changes.

34/ Y. Sugiura, Suisan, 1939.

Rod and line angling (ippon zuri) for bonito was carried on by large crews of fishermen who lined one side of the vessel, standing a few inches above the water on a narrow rack. When a shoal was sighted, livebait which was carried in tanks was thrown out to slow up the movement of the fish. As the bonito bit, the livebait was gradually replaced by lures. The biting was usually over in less than a half hour. The fish, piled on the deck during the operations, were then stowed below in the fish wells and the boat moved on to search another shoal. If the biting had been good several thousand fish were caught in a few minutes.

Trawling and "Bottom Dragging". The capture of bottom feeding species, chiefly *Sciaena* species and flatfish but also sea breams, sharks and others, by means of trawling was really of two rather distinct types as operated by the Japanese. The first was that by large modern vessels operating otter trawls; the second that of considerably smaller boats using simple drag nets. The term "trawling" sometimes applies only to the former, but at other times is used to include both. Table 23 gives the official production statistics.

Trawling. The large trawlers operated chiefly in the East China Seas and the Yellow Sea although some operated in the South China Sea and, in the years immediately preceding the war, a few worked in foreign waters (Table 8). The waters of the East China Sea, the Yellow Sea and the South China Sea were divided into districts which have been carefully mapped according to productivity. Konda 35/ reports that of the 20 fishing districts of the East China and Yellow

35/ Seiji Konda, Geography of the Marine Industry of Japan, 1936.

TABLE 23

Production from Japanese Trawling, 1935 - 1940

	Total		Sciaena		Sciaena		Flatfish		Shark		Pagrus		Others	
	Production		schlegelii		japonica		Flatfish		Shark		major		Others	
	1,000 kan	1,000 yen	1,000 kan	1,000 yen	1,000 kan	1,000 yen	1,000 kan	1,000 yen	1,000 kan	1,000 yen	1,000 kan	1,000 yen	1,000 kan	1,000 yen
1935	14,258	7,044	4,782	1,697	1,381	1,155	1,050	608	460	137	53	72	6,531	3,376
1936	13,887	6,831	4,753	1,854	738	723	881	612	572	178	28	51	6,915	3,413
1937	13,380	7,951	4,613	2,070	1,054	938	663	508	451	158	23	51	5,557	4,227
1938	10,072	7,670	3,230	1,989	1,037	1,080	458	482	306	136	18	25	5,024	3,958
1939	9,710	9,676	3,326	2,671	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1940	9,002	10,912	3,081	3,341	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

n.a. - not available.

Source: Statistical Abstract of the Ministry of Agriculture and Forestry, 1936;
Toyo Keizai Nenkan, 1943.

Seas, four produced about 60 percent of the entire production of this area. Likewise in the South China Seas some areas were very productive whereas others were low in productivity.

The trawlers were licensed by the Ministry of Agriculture and Forestry and were strictly limited in number. The number permitted to operate in waters of Japan proper, the China Sea and the Yellow Sea was limited to 70; a few other vessels of this class operated, however, in other waters. Trawling in the China Sea was also limited to certain seasons: north of 25° N. from October 1 to June 1; and south of 25° N. from May 1 to November 1.

The operations off the China coast which provided the bulk of the trawling production were of a large-scale commercial nature carried on chiefly by one company (Nippon Suisan K. K.) with modern vessels, equipment and production techniques. In 1937 it operated 61 of the vessels working in the East China Sea and the Yellow Sea. The trawlers of this company, vessels of several hundred tons driven by steam or Diesel engines, had their chief base of operations at Shimonoseki where constant control over the fleet was kept. Each trawler was equipped with wireless so that at all times it was in touch with the base. When a boat started work, it notified the business office in Shimonoseki of its location and after every 10 hauls made a full report on its catch (quantities and species). The office, which constantly kept in touch with the fish markets at home, notified trawlers at work of the prevailing prices for various kinds of fish so that the catch could be evaluated. Trawlers in touch with one another by wireless could rush to places where the catch was most

profitable at the time. In addition to these commercial purposes the wireless was also used to keep every trawler at sea fully informed of weather changes.

The trawlers were away 12 - 14 days each voyage; of these, 4 - 6 days were required in going to and returning from the grounds, some of which were more than 800 miles distant. Thus 8 - 10 days on the average were spent in actual work each trip. Each trawler made about 35 - 40 hauls during each voyage, one haul taking 5 - 5½ hours. Upon their return to port, the trawlers did not normally lay over more than 24 hours so that apart from the time necessary for periodic repair and overhauling (about one month per year) each trawler made about 20 - 24 voyages per year.

Fish caught by the company's fleet was landed at Shimonoseki, Hakata and Nagasaki, but the largest amounts were brought to Shimonoseki 36/ which had the best facilities for the quick transportation to the large urban fish consuming centers.

Bottom dragging. These operations carried on by smaller vessels of 20 to 100 tons had a more restricted cruising radius. They used hand-reel nets which in most cases were drawn by two vessels working together.

There appears to have been 1,800 - 2,000 such vessels in operation in recent years although one source reports more than 3,000 in 1931.

36/ According to one source 56 vessels made Shimonoseki their headquarters in a recent year while 8 worked from Nagasaki and 6 from Hakata.

In 1933 the 1,823 vessels were distributed as follows: 37/

Offshore waters	
East of 130°E and north of 25° N	870
West of 130° E and north of 25° N	765
Kwantung waters	116
Korean and Soviet waters	60
South China Sea	<u>12</u>
Total	1,823

Like the larger other trawlers these vessels were limited in number and in the extent of their operations. Each boat was licensed by the Ministry of Agriculture and Forestry. To protect the coastal fisheries of the small villages, drag-netting was not permitted along most coastal areas. 38/

The dragging vessels in offshore waters operated from ports of the west coast prefectures, chiefly Nagasaki and Yamaguchi, with smaller numbers from Fukuoka and Saga prefectures. In 1933, 901 of the vessels operating in offshore waters were from Nagasaki Prefecture and 559 from Yamaguchi. The 116 Japanese vessels operating in Kwantung waters secured permits from the government of Kwantung Leased Territory and made Dairen and Port Arthur their home ports. The vessels working in waters along the Korean and Soviet coasts were based on the ports of northern Japan; in 1933, 23 were from Hyogo Prefecture and 21 from Hokkaido.

37/ Seiji Konda, Geography of the Marine Industry of Japan, 1936. Presumably the production from the drag-net boats in the offshore waters is included in either the coastal fisheries or the deep-sea fisheries in home waters (probably the latter). The South China Sea production may be included in production figures for deep-sea operations in "home waters" or with trawling. The production from the operations in the other areas presumably is included in production of Korean waters and Northern waters.

38/ Some sources say it was prohibited in all coastal areas. but may be referring to trawling rather than drag netting.

The Northern Fisheries.

General. Included in the "Northern Fisheries," as usually considered are three major categories: the fisheries in Soviet waters, the floating factory fisheries and the fishing off the Northern Kuriles. 39/ Together these accounted for an annual production valued from ¥ 72 million to ¥ 132 million in the period 1936 - 1940 (Table 24). Figures giving the volume of the entire catch of these fisheries are not available because part of the catch is immediately canned or processed. It may be roughly estimated at between 200,000 and 300,000 metric tons annually in the prewar period. 40/

TABLE 24

Value of Japanese Northern Fisheries, 1936 - 1940

(1,000 yen)

	<u>1936</u>	<u>1937</u>	<u>1938</u>	<u>1939</u>	<u>1940</u>
Fisheries in Soviet Waters	35,489	37,598	44,007	49,164	44,524
Factory Ship Production	19,181	25,809	28,136	31,573	21,623
Fishing off Northern Kuriles	<u>17,807</u>	<u>25,483</u>	<u>30,663</u>	<u>42,920</u>	<u>25,315</u>
Total	72,477	88,890	102,806	133,657	91,462

Source: Toyo Keizai Nenkan, 1943.

39/ The fisheries of Karafuto and the southern Kuriles might well be included in the "northern fisheries," but statistics on the production of these areas generally are not included. Small coastal fishing craft operate off the southern Kuriles and also predominate off Karafuto whereas the northern fisheries described here are of a larger scale commercialized nature based on Japan proper.

40/ The statistics available make it difficult to estimate the production of the Northern fisheries in terms of weight as caught. Some estimates place the 1938 production as high as 350,000 metric tons.

Most of this northern catch was normally exported; one estimate places the export at 65 to 70 percent of the production, the remaining 30 to 35 percent being for domestic consumption. Approximately one-fourth to one-third of Japan's prewar fishery exports are reported to originate in these fisheries.

The northern fisheries provided employment, full or part-time, for about 40,000 - 50,000 persons. Most of these were seasonal workers recruited from the small farming-fishing villages of northern Honshu and Hokkaido. From April or May until September they fished or processed fish in the northern areas and then returned to eke out a meager living from the desolate land and the coastal waters of their home districts.

Hakodate and Otaru in Hokkaido were the bases of operations for the northern fisheries, the ports from which the fishing and supply vessels sailed and at which there were facilities for shipbuilding and ship repairing, can manufacturing and storage. Hakodate was also the main export point for the canned products.

The northern fisheries are controlled by "big business." At one time more than a hundred small firms were operating in these areas but after successive mergers over a period of years most of the operations by 1939 had come under two large companies: the Nichiro Gyogo K. K., which had virtually a monopoly over the fishing in Soviet waters and also operated in the northern Kuriles; and the Nippon Suisan which operated the crab canneries and also the trawl fisheries off the Kuriles

and Kamchatka. 41/

The areas fished, the location of fishery lots and of the canneries for the year 1940 are shown in Figure 8. Production of canned fish is discussed in more detail under Processing (pages 127-136), but is also mentioned here because it is impossible to separate production and processing for these northern fisheries. Each of the three subdivisions of the northern fisheries is discussed briefly in turn.

Fisheries in Soviet Waters. The fishing in Soviet waters was done along the Soviet coast by virtue of the Russo-Japanese Fishing Treaty which not only permitted fishing in these waters but also provided for the leasing of fishing lots by the Japanese. This enterprise which has frequently given rise to disputes between the Soviet Union and Japan (pages 185-189) was the oldest of the northern fisheries and in recent pre-war years still provided the largest output. Japanese operations engaged about 20,000 men and 150 vessels in recent years and production was valued at ¥ 35 - 49 million, of which canned fish constituted about 60 percent (Table 25). 42/

In this fishery Japanese and Russians both have rented "lots" 43/ and carry on fishing for salmon and crab. From the shore bases shore trap nets are operated to catch salmon and nets for crab. In 1940 the lots

41/ See pages 178-181 for more details of these companies.

42/ During the war, particularly since 1942, the production of this fishery has been greatly reduced but a report of May 1945 indicated expected operations on "25 grounds in four areas."

43/ The "lots" consisted of specified ground on shore, 340 meters wide and 90 meters deep where processing plants, barracks and other accommodations for the workers were built. By the stipulations of the treaty, no lots could be closer together than 2,120 meters.

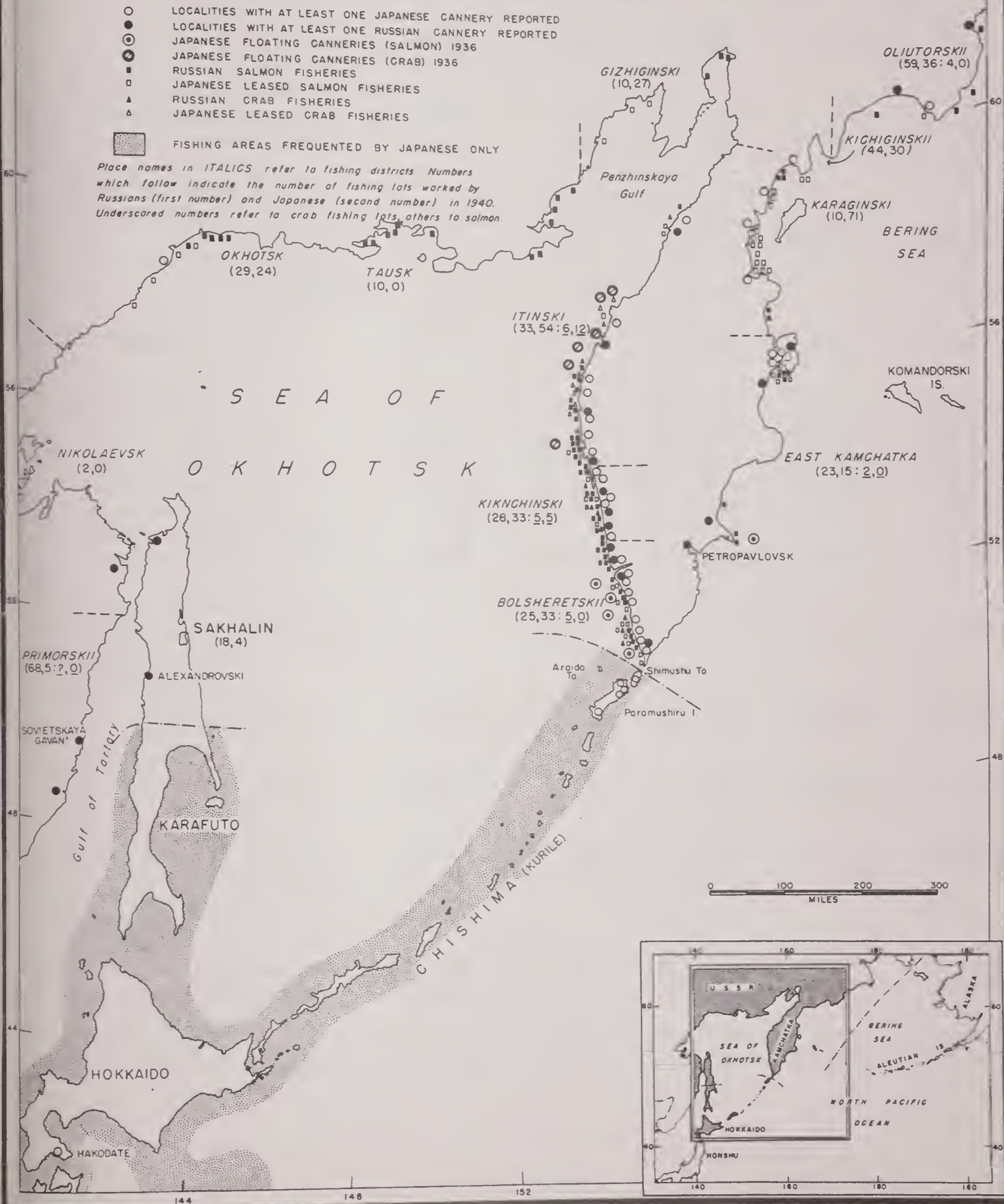
JAPANESE AND RUSSIAN FISHERIES IN THE NORTHWEST PACIFIC

- LOCALITIES WITH AT LEAST ONE JAPANESE CANNERY REPORTED
- LOCALITIES WITH AT LEAST ONE RUSSIAN CANNERY REPORTED
- ⊙ JAPANESE FLOATING CANNERIES (SALMON) 1936
- ⊙ JAPANESE FLOATING CANNERIES (CRAB) 1936
- RUSSIAN SALMON FISHERIES
- JAPANESE LEASED SALMON FISHERIES
- ▲ RUSSIAN CRAB FISHERIES
- △ JAPANESE LEASED CRAB FISHERIES



FISHING AREAS FREQUENTED BY JAPANESE ONLY

Place names in *ITALICS* refer to fishing districts. Numbers which follow indicate the number of fishing lots worked by Russians (first number) and Japanese (second number) in 1940. Underscored numbers refer to crab fishing lots, others to salmon.



0 100 200 300
MILES

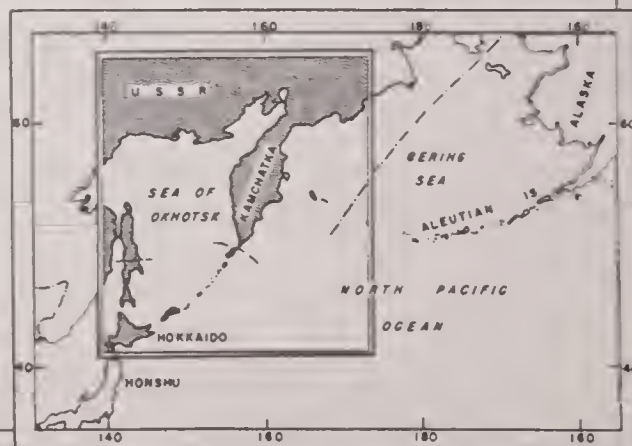


TABLE 25

Japanese Fisheries in Soviet Waters, 1936 - 1940

	<u>1936</u>	<u>1937</u>	<u>1938</u>	<u>1939</u>	<u>1940</u>
Number of Fisheries:					
Leased for the year	399	389	386	356	349
Worked for the year	376	355	328	296	307
Fishing Vessels:					
Steamships - Number	152	141	131	118	169
- Tonnage	360,653	331,734	309,884	307,496	433,198
Sailing ships - Number	1	1	1	-	-
- Tonnage	525	525	525	-	-
Fishermen	20,364	19,858	19,031	n.a.	n.a.
Production					
Total, Koku	571,351	549,858	479,745	510,080	340,234
Dog Salmon, Koku	337,561	176,750	169,859	122,332	139,841
Salmon Trout, Koku	164,627	298,869	221,873	323,287	152,603
Red Salmon, Koku	67,204	71,106	86,661	63,012	45,964
King Salmon, Koku	1,925	3,086	1,257	1,433	1,681
Herring Guano, Koku	34	47	95	27	145
Crab, pieces (thousands)	6,565	7,759	8,428	8,968	6,509
Fishery Products, Prepared					
Total - Value (1000 yen)	35,489	37,598	44,007	49,164	44,524
<u>Salt cured:</u>					
Total					
Quantity, Koku	376,434	555,432	258,011	257,104	173,784
Value (1000 yen)	13,099	11,698	11,667	16,192	12,833
Salmon					
Quantity, Koku	307,578	374,486	151,552	107,201	118,431
Value (1000 yen)	11,538	7,825	8,536	9,255	10,084
Salmon Trout					
Quantity, Koku	68,856	180,946	106,459	149,903	55,353
Value (1000 yen)	1,560	3,873	3,131	6,938	2,749
<u>Canned:</u>					
Total					
Quantity, Cases	1,147,243	1,155,407	1,287,946	1,193,630	1,030,998
Value (1000 yen)	20,198	23,235	29,011	27,911	26,758
Red Salmon					
Quantity, Cases	343,000	342,325	444,624	n.a.	n.a.
Value (1000 yen)	8,826	11,841	15,985	12,061	10,472

TABLE 25 (Continued)

Japanese Fisheries in Soviet Waters, 1936 - 1940

	<u>1936</u>	<u>1937</u>	<u>1938</u>	<u>1939</u>	<u>1940</u>
Salmon					
Quantity, Cases	117,000	1,318	35,015	n.a.	n.a.
Value (1000 yen)	2,425	26	695	599	1,018
Salmon Trout					
Quantity, Cases	637,000	733,055	728,328	n.a.	n.a.
Value (1000 yen)	6,338	7,084	7,886	11,356	12,499
Crab					
Quantity, Cases	50,000	78,709	79,979	n.a.	n.a.
Value (1000 yen)	2,610	4,284	4,445	3,895	2,768
Others					
Value (1000 yen)	2,192	2,666	3,329	5,061	4,933

1 Koku = 40 kan.

n.a. - not available

Source: Orient Yearbook, 1940; Toyo Keizai Nenkan, 1943.

leased to the Japanese numbered 349, less than 50 percent of the total number although in earlier years Japan had a much larger share; in 1924, for example, it rented 88 percent of the total number. According to Japanese statistics in the period 1934 - 1939 Japan averaged 76 percent of the rent and 57 percent of the salmon catch from slightly less than half of the lots and 40 percent of the rent and 45 percent of the crab catch from about one-third of the lots (Table 26). The areas of Japanese operations, both fishing and processing, are chiefly along the coasts of Kamchatka but some are along the Okhotsk and Primorsk coasts of Siberia (Table 27 and Figure 8). 44/

Floating Factory Fisheries. Floating factory operations, concentrated on salmon and crab, were carried on chiefly in the Okhotsk and Bering Seas north of 51° N. and beyond the three mile limit of territorial waters. 45/ Most of the fishing was near the coasts of Kamchatka (both east and west), but some of the vessels worked out into Bering Sea. 46/ In recent prewar years 6 - 11 large salmon factory vessels and 4 - 9 crab factory vessels, each attended by auxiliary ships, were operating in this fishery and more than 6,000

44/ Japanese operations in the waters of the Primorsk region of Siberia and in the waters of Sakhalin are very limited. These areas are fished almost exclusively by the Russians. The Japanese, however, had nine lots in the Primorsk region in 1939 (Table 27).

45/ The mothership system of salmon fishing was limited by official regulations to areas north of 51° N., thus excluding these floating canneries from the coastal waters of Hokkaido, Karafuto and the Kuriles.

46/ Since 1930 several crab canneries have operated in Bristol Bay, Alaska and in 1937 and 1938 the catching of salmon in these waters aroused American fishermen (see page 188).

TABLE 26

Soviet Water Fishery

Japanese Operations

	Salmon and Trout			Crab			Total	
	Number of Grounds	Rental (1,000 rubles)	Quota (1,000 centner)	Number of Grounds	Rental (1,000 rubles)	Quota (1,000 cases)	Number of Grounds	Rental (1,000 rubles)
1934	369	6,627	1,367	17	440	105	386	7,067
1935	378	6,804	1,380	17	440	105	395	7,244
1936	382	6,840	1,386	17	440	105	399	7,280
1937	372	6,742	1,351	17	439	105	389	7,181
1938	369	6,771	1,346	17	440	105	386	7,210
1939	339	6,592	1,197	17	464	105	356	7,056

Soviet Operations

1934	333	1,576	957	32	723	130	365	2,479
1935	343	2,189	983	32	711	130	375	2,900
1936	387	2,285	1,019	32	711	130	419	2,997
1937	388	2,378	1,017	31	694	127	419	3,072
1938	375	2,342	988	27	647	117	402	2,990
1939	361	2,160	950	23	584	106	384	2,744

Note: The term "quota" is the maximum amount of catch permitted under the Soviet-Japanese agreement. The quota has been reached invariably each year.

Source: Far East Yearbook, 1940.

TABLE 27

Japanese Fishery Establishments in Siberia, 1939

<u>Location</u>	<u>Number of Lots</u>	<u>Yield</u>	<u>Canneries^{a/}</u>	<u>Refrig- erators^{a/}</u>	<u>Freezing Plants ^{a/}</u>
<u>Eastern Kamchatka:</u>					
N.E. Kamchatka	138	Salmon	8	24	4
S.E. Kamchatka	15	Salmon, crab			
<u>Western Kamchatka:</u>					
N.W. Kamchatka	73	Salmon)			
S.W. Kamchatka		Salmon and)	25	24	0
		salmon)			
		trout,)			
		crab)			
Okhotsk Coast	42	Salmon trout, herring	1	7	0
Primorsk	9	Salmon and salmon trout	0	0	0
Total	348		34	55	4

^{a/} These are plants of the Nichiro Gyogyo K. K. which virtually controls all the operations in Soviet waters. In 1938 the company operated 10 small storage plants on vessels in addition to 48 ice storage plants. Presumably this type of plant on vessels was also operated in 1939.

Source: O.S.S. report "The Fishing Industry of Japan," June 1942.

fishermen and workers were employed on these floating canneries (Table 28).

Floating salmon canneries made their first appearance in 1927, in direct competition with the fishery of the leased lots; fishing concerns which had lost their lots to the Nichiro Gyogyo K. K. turned to floating canneries. After 1935, however, when there was an amalgamation of the canneries under a subsidiary of the Nichiro Gyogyo K. K., the factory vessels were developed in competition with Soviet operators of leased lots. Most of the canned salmon produced on floating factory ships were red salmon, the most valuable canned product and also the mainstay of the fishing lots. 47/

Floating crab canneries, controlled by Nippon Suisan, accounted for about half of the Japanese production of canned crab in 1936 and other prewar years. 48/ The system of operation was much like that for salmon. The season began in April and lasted until October. Actual fishing was done from small "kawasaki" boats, which spread their gill nets 49/ in lengths of $2\frac{1}{2}$ to 4 miles along the sea bottom surrounding the cannery. The crabs caught, giant or "taraba-kani" crabs, were taken to the factory ships for canning.

47/ Operations of floating salmon canneries as conducted were in many respects tantamount to an economic blockade against coastal fisheries. Shore canneries complained of decreases in the size of fish caught and reported that many were marked by the nets of the floating canneries.

48/ Competing with the Japanese ships for crab after 1928 were floating crab canneries of the Soviet Union.

49/ Each crab catcher boat carried about 500, 168 foot gill nets of 18" mesh (stretched) which were used in the lengths of several miles.

TABLE 28

Japanese Factory Ship Fishing, 1935 - 1940

Salmon and Salmon Trout									
Fishing Vessels				Value of Manufactures (thousand yen)					
Number	Tonnage	Number of Tender Ships		Catch Number in 1,000's		Total	Canned ^{a/}		
		Number	of Men	Number			Canned	Salted	Frozen
									Fish Eggs
1935	8	29,456	250	4,972	11,544	10,129	7,785	1,651	590
1936	6	20,467	170	3,478	8,796	9,691	7,409	1,760	455
1937	7	22,002	170	3,310	10,115	14,615	12,051	1,750	691
1938	7	21,826	170	3,529	9,830	14,250	10,449	3,632	-
1939	.1	34,451	n.a.	n.a.	11,651	21,132	15,146	5,290	375
1940	10	33,661	n.a.	n.a.	10,400	15,558	9,563	5,554	-

Crab				
Fishing Vessels ^{b/}		Number of Men	Catch Number in 1,000's	Canned Production Number of cases ^{c/}
Number	Tonnage			
1935	9	3,124	11,332	171,000
1936	9	3,243	13,948	184,836
1937	9	3,420	14,913	204,375
1938	8	2,824	18,536	253,596
1939	7	n.a.	14,230	204,000
1940	4	n.a.	8,558	122,400
				Value (1,000 yen)
				8,429
				9,490
				11,194
				13,886
				10,441
				6,065

a/ Number of cases given in Table 25.

b/ Tender ships for crab canneries numbered 104 in 1936.

c/ 1 case of crab equals 22.32 kilograms.

Source: Japan Yearbook 1940-41; Orient Yearbook, 1942; Toyo Keizai Nenban, 1943.

Northern Kuriles Fisheries. 50/ Fishing is the most important industry of the northern Kuriles; in fact, it is practically the only industry. In the decade immediately preceding the war the northern Kurile fisheries were developed commercially and in 1938 the value of this production was almost three-fourths that of the Soviet waters and exceeded that of the factory ships (Table 24). Fishing of the northern Kuriles was conducted largely in the vicinity of the three northernmost islands -- Shumushu, Paramushiro and Araitto. In 1938, 600 vessels were reported to be employed in this fishery; most of the vessels were based on Hakodate, coming north for the summer season. The boats were largely trawlers and small motorized salmon drift-netters but there were also a considerable number of unmotorized hand-line cod-fishing craft and a few small crab-netters and boats for line trawling of cod. These boats had shore bases within the area for the period of summer operation; these places also served as processing centers. In 1935 there were 34 fishing bases in the northern Kuriles, the most important being located at Suribachi Bay, Murakami Bay, Kashiwabara Bay and Kataoka Bay. 51/

Salmon, crab and cod were the basis of the northern Kurile fishery, salmon being the mainstay (Table 29). Salmon were caught by trawling and by nets placed in rivers and along the shores; trawling was particularly effective as it was possible to intercept schools of fish heading

50/ The southern Kuriles are regarded for most statistical purposes as a section of the Nemuro Branch Bureau of Hokkaido and are not included in "the northern fisheries." For further details of the Kurile fisheries see Military Government Handbook, Kurile Islands, OPNAV 50 E-2, November 1943.

51/ Since then a fishing base is reported to have been developed in the Kakumabetsu region.

TABLE 29

Fisheries of Northern Kuriles, 1936 - 1940

	Catch			Value of Manufactures				
	Salmon and Salmon trout No. (1000)	Crab Number	Cod Number	Other Number	Seaweed (kan)	Total 1000 ¥	Salmon	
							Canning 1000 ¥	Salmon Salting 1000 ¥
1936	51,899	2,312,183	4,139,696	323,000	20,320	17,807	9,964	5,232
1937	84,365	3,023,006	3,429,846	579,262	33,650	25,483	12,199	9,111
1938	82,689	3,606,485	3,263,059	997,619	22,288	30,663	12,268	13,356
1939	130,960	4,227,393	3,628,209	7,184,746	740 ^{a/}	42,920	11,013	23,412
1940	31,772	2,959,210	4,245,833	6,027,689	28,844	25,315	8,777	10,287

a/ As given in source.

Source: Toyo Keizai Nenkan, 1943.

toward the spawning rivers which flow into the Okhotsk Sea. About 60 percent of the salmon from this fishery is reported to have been canned in prewar years; the value figures (Table 29) suggest, however, that from 1938 on more was salted than canned. The principal crab area was along the western shore of Paramushiro. In 1938 16 vessels and 4 crab canneries were reported. Cod was caught in fairly deep water off the western coast of Paramushiro and Shimushu from April until September. In 1938 2,200 persons were engaged in catching and drying cod in the northern Kuriles.

Fishing in Outlying Colonial Waters. Fishing in the waters of Korea, Formosa, Kwantung Leased Territory and the South Sea Mandated Islands, independent of operations in these waters by locally based fishermen, accounted for 57,500 metric tons in 1936 and 36,000 tons in 1938 (Table 30). Some of these operations were by trawlers and drag-netters, others were by purse seining and those of the South Seas and Formosa included bonito and tuna fishing.

Special Fisheries.

Seaweed Production. Sea plants attain a remarkable importance in the fisheries of Japan. Numerous species were taken for widely different uses: some were dried and used as food, others processed to yield iodine, potassium or other chemicals, agar-agar, sizing materials and fertilizers. The total production of seaweed ranged from 389 million to 589 million tons in the period 1935 to 1940, and in 1940 when the production was 589 million tons it was valued at ¥ 39 million (Table 31).

TABLE 30

Japanese Fishing in Outlying Colonial Waters, 1935 - 1939

	<u>1935</u>	<u>1936</u>	<u>1937</u>	<u>1938</u>	<u>1939</u>
<u>Korea</u>					
Number of boats	1,063	n.a.	n.a.	n.a.	n.a.
Volume of catch, 1000 kan	29,393	2,705	9,711	6,277	4,718
Value of catch, 1000 yen	4,021	3,063	3,196	3,444	3,159
<u>Formosa</u>					
Number of boats	15	15	124	26	n.a.
Volume of catch, 1000 kan	24	42	137	103	406
Value of catch, 1000 yen	26	23	126	92	n.a.
<u>Kwantung</u>					
Number of boats	212	200	167	146	n.a.
Volume of catch, 1000 kan	1,564	2,065	1,203	1,273	1,165
Value of catch, 1000 yen	922	978	531	636	n.a.
<u>South Sea Mandated Islands</u>					
Number of boats	n.a.	84	128	191	n.a.
Volume of catch, 1000 kan	n.a.	524	1,027	966	689
Value of catch, 1000 yen	n.a.	1,831	3,350	2,340	n.a.
<u>Total</u>					
Number of boats	1,290	n.a.	n.a.	n.a.	n.a.
Volume of catch, 1000 kan	30,981	15,336	12,078	9,619	7,008
Value of catch, 1000 yen	4,969	5,895	7,203	6,512	n.a.

n.a.- - Not available

Source: Compiled from official Japanese statistics from several sources.

TABLE 31

Seaweed Production, 1935-40 a/

	<u>Quantity</u>		<u>Value</u>
	1000 kan	1000 tons	1000 ¥
1935	132,141	496	10,173
1936	128,685	483	12,308
1937	153,725	576	14,927
1938	109,824	403	14,332
1939	103,660	389	27,304
1940	157,085	589	38,884

Source: Toyo Keizai Nenkan, 1943.

a/ It is not clear from the source whether this includes production of *Porphyra* raised by culture and the production of seaweed in the Northern Kuriles or only the amount taken in the coastal fisheries of Japan proper. About 8 - 9 million kan was produced annually by culture and 20 - 30 thousand kan produced in the Northern Kuriles.

The three most important kinds of marine algae produced were:

(1) brown algae (*Laminaria* species) commonly known as "tangle"; (2) laver or nori (*Porphyra* species); and (3) tengusa (*Gelidium* species) used for the manufacture of agar-agar.

Laminaria. Several species of the *Laminaria* genus which grow most abundantly in the waters of the north, especially in those of Hokkaido and Karafuto, were collected and processed in several ways. Nemuro in Hokkaido was the center of this industry. The chief use was as a food; under the general name of "kombu" it was of universal use for flavoring purposes in Japanese cookery. Some of the "tangle" was used for the production of iodine and potassium. Although most of it was consumed domestically some is normally exported, chiefly to China.

Laver or nori (also called ama-nori and asakusa-nori), of which Porphyra tenera is the leading species, was not only collected but also cultivated in numerous places. It was produced chiefly along the east coast of Honshu and along the shores of the Inland Sea. Japanese statistics for 1936 claimed a culture area of 50 million square meters. Yields in recent years have been 30.8 to 35.0 million kilograms (Table 15). The largest production was in the waters of Tokyo Bay; Tokyo Prefecture and the neighboring prefectures of Kanagawa and Chiba are estimated to have produced about 70 percent of the total. Aichi, Mie and Hiroshima prefectures ranked next with Yamanaguchi, Kumamoto, Fukuoka and Shizuoka prefectures producing smaller amounts.

Shallow bays and inlets where the water is somewhat brackish and where the plants are partially out of water at low tide were preferred for cultivation. Bundles of bamboo brush on which spores were collected were placed in the sea in September and later the bunches were transferred to nearby rearing sites. The gathering of "leaves" began in December and continued through the following March, in many cases the collection being carried on by farmers as a winter season side-line. The weeds were washed, cut into shreds and then dried in sheets on reed screens. Sun drying was commonly employed although drying rooms with artificial heat were used in some places. Dried laver, used as a food, was simply roasted or was further processed to give it special flavor.

Gelidium. Various species of Gelidium, found along the entire Japanese coast, were used in the manufacture of agar-agar (see page 145). The largest quantities are produced in the shallow waters of the east coast of the warm current region (Nagano, Osaka, Hyogo, Kyoto, Gifu, Yamanshi, Shizuoka, Wakagama and Tokyo prefectures), but agar-agar was also made in Karafuto from a different raw material.

Others. Of the numerous other seaweeds produced in lesser quantities than the three described above, one was perhaps more important -- funori (Gloiopeltis species) which was used as sizing for textiles. The plant grows naturally along much of the Japanese coast, but was also cultivated in some localities by placing rocks in the sea to which the algae attached itself. The Matsuurbi district of Nagasaki Prefecture and Aomori, Ibaraki and Wakayama prefectures are reported to have produced considerable quantities.

Whaling. Whales were of importance to Japan chiefly in providing oil (for domestic consumption and export), but also furnished bone-meal fertilizer and human food. In 1939 the value of Japanese whaling was ¥ 26,777,000 (Table 32), a sizeable item in the marine products industry.

In the years preceding the war Japan's whaling activities increased greatly; in 1930-31 Japan caught 2.7 percent of the whales taken in the world's commercial whaling operations and produced

TABLE 32

Japanese Whaling Operations

<u>Year</u> ^{a/}	<u>Japan Proper</u>		<u>Colonial Waters</u>	
	<u>No. of whales caught</u>	<u>Value (¥ 1000)</u>	<u>No. of whales caught</u>	<u>Value (¥ 1000)</u>
1934	1,156	1,142	202	434
1935	1,356	1,991	123	430
1936	1,598	2,467	173	647
1937	1,641	2,578	173	754
1938	1,814	3,397	236	895
1939	1,790	3,873	189	1,118
1940	2,153	5,068	145	1,047

Antarctic Ocean

<u>Year</u> ^{a/}	<u>Mother Ships</u>	<u>Tender Ships</u>	<u>Crews</u>	<u>No. of whales caught</u>	<u>Value of Manufacture (¥ 1000)</u>
1934	-	-	-	-	-
1935	1	3	213	213	487 ^{b/}
1936	1	5	343	639	2,263 ^{b/}
1937	2	13	766	1,965	8,727 ^{b/}
1938	4	31	1,796	5,565	14,456 ^{b/}
1939	6	49	2,794	7,540	21,786
1940	n.a.	n.a.	n.a.	n.a.	n.a.

Source: Official Japanese statistics from several sources. 1940 figures from Toyo Keizai Kenkan, 1943.

n.a. - not available.

^{a/} Year ending March 31st.

^{b/} Estimate.

0.5 percent of the world's whale oil; in 1937-38 Japan caught 13.8 percent of the total world's production and produced 11.6 percent of the oil (Table 33).

Japanese whaling is carried on in two areas: Antarctic waters and the Japanese home and nearby colonial waters. The Antarctic operations are the more productive, accounting in 1937-38 for more than 5,500 whales and more than 64,000 metric tons of oil as compared with less than 2,000 whales and 5,500 tons of oil from the operations in home and colonial waters. (Table 34).

Antarctic Operations. Japan's entry into Antarctic whaling dates from 1934-35 when a ship purchased in Norway with a crew including Norwegians was licensed to operate by the Japanese government. By the 1938-39 season six ships entirely manned by Japanese were operating. All of these were floating factories averaging 16,000 - 17,000 tons. Working from these mother ships were powerful catcher boats averaging about 350 tons equipped with harpoon guns. In 1938-39 the catcher boats numbered 49, an average of eight for each of the mother ships.

Three companies were engaged in the Japanese Antarctic whaling in 1938-39; the Nippon Suisan K. K. with three ships, the Taiyo Hogeï K. K. with two, and the Kyokuyo Hogeï K. K. with one (Table 35).

TABLE 33

Japanese Whaling Compared to World's Total, 1930-31 to 1937-38

Number of Whales

	<u>All countries all areas</u>	<u>Japan</u>	<u>Japanese Percent of total</u>
1930-31	42,874	1,147	2.7
1931-32	12,797	1,036	8.1
1932-33	28,668	1,122	3.9
1933-34	32,167	1,436	4.5
1934-35	39,254	2,000	5.1
1935-36	44,782	2,479	5.5
1936-37	51,256	4,025	7.9 ^{a/}
1937-38	54,664	7,552	13.8 ^{a/}

Oil Production
(barrels) ^{b/}

1930-31	3,686,976	16,274	0.5
1931-32	915,842	20,230	2.2
1932-33	2,596,778	21,698	0.8
1933-34	2,573,155	22,766	0.9
1934-35	2,691,283	42,133	1.6
1935-36	2,871,117	74,289	2.6
1936-37	3,210,671	189,012	5.9
1937-38	3,635,010	422,036	11.6

Source: International Whaling Statistics, XIII, Oslo, 1939.

^{a/} A Japanese source gives slightly different figures for these -- 5.7% in 1936-37 and 12.1% in 1937-38, but the same percentages of the oil production as given here.

^{b/} A barrel equals 1/6 ton.

TABLE 34

Japanese Whaling in 1937-38 and Summer of 1938 ^{a/}

	<u>Antarctic</u>	<u>Coast of Japan and Korea</u>	<u>Total</u>
Species of whales caught:			
Blue	2,397	4	2,401
Fin	2,709	293	3,002
Humpback	475	60	535
Sei	-	553	553
Sperm	1	785	786
Others	-	275 ^{b/}	275
Total	5,582 ^{d/}	1,970	7,552
Oil Production (barrels) ^{c/}	338,683 ^{d/}	33,353	422,036
Shore stations	-	21	21
Floating factories	4	-	4
Catcher boats	30	25	55

Source: International Whaling Statistics, XIII. Oslo, 1939.^{a/} These figures differ slightly from the official Japanese figures (Table 32).^{b/} Two right whales and different kinds of small whales.^{c/} A barrel equals 1/6 ton.^{d/} This is the last year for which full data are available. According to Japanese sources 1938-39 Antarctic production amounted to 7,540 whales and 483,774 barrels of oil.

TABLE 35

Ships Engaged in Japanese Antarctic Whaling, 1938-39

<u>Floating factory ships</u>	<u>Tonnage</u>	<u>Number of Catcher Boats</u>	<u>Company Owning ship ^{a/}</u>
Tonan Maru	9,966	5	Nippon Suisan K. K.
Dai Ni Tonan Maru	19,425	8	Nippon Suisan K. K.
Dai San Tonan Maru	19,209	8	Nippon Suisan K. K.
Nisshin Maru	16,764	9	Taiyo Hogeï K. K.
Dai Ni Nisshin Maru	17,553	9	Taiyo Hogeï K. K.
Kyokuyo Maru	17,548	9	Kyokuyo Hogeï K. K.
		<u>48</u> ^{b/}	

Source: Japan's Fishery Industries, 1939 (Special issue of Japan Times and Mail, 1939).

a/ A fourth mother-ship was to be added to the fleet of Nippon Suisan K. K. for the 1939-40 season; it was to have a tonnage of 19,400.

b/ Official Japanese statistics report 49 catcher boats.

Most of the Antarctic whale oil was exported. In 1938-39 of the 80,600 tons (483,800 barrels), 70,000 tons were exported leaving only 10,600 tons for use in Japan.

The Japanese operations in the Antarctic were carried on unimpeded by international regulations since Japan has refused to be a party to the international whaling conventions. Other nations operating in Antarctic waters 52/ have restricted whaling operations by agreement, imposing a season of whaling and other restrictions. 53/ Japanese whaling ships are licensed and the seasons and areas are established by the Japanese government. The seasons so established are, however, longer than those established under the international

52/ In 1937-38 these nations were: the United States, Great Britain, Norway, Germany, Union of South Africa, Argentina, Australia, Iceland and New Zealand.

53/ International whaling in the Antarctic has been restricted since the 1932-33 season. See pages 191 - 192.

regulations and the areas are larger. In 1937-38 the international convention limited the season south of 40° S. latitude to the period between December 8th and March 15th whereas in that year Japan started whaling on November 1st and continued until March 26th.

Coastal and Colonial Whaling. Several kinds of whales including the sperm, sei, fin and humpback were taken in waters bordering Japan (including the Kuriles) and its colonial possessions, chiefly Korea. The principal whaling grounds were off the northeastern coast of Honshu and the southern Kuriles where they are taken during the summer months, but other areas including southern Japan proper, Korea, Formosa and the Bonins are reported to have engaged in whaling.

Table 36 gives the catch by type for 1937 and 1938. Production of oil in the period preceding the war amounted to about 6,000 - 8,000 tons, most of which was used domestically.

Whaling boats in home and colonial waters are restricted to 30 and the catches are taken only by licensed persons. The vessels were modern whalers of the Norwegian type, most of them less than 120 tons.

Four companies operated in the coastal fisheries of home and colonial waters in 1938; their relative importance is shown in Table 37.

TABLE 36

Japanese Coastal Whaling, 1937 and 1938

	1937		1938	
	<u>Number</u>	<u>Value</u> (¥ 1000)	<u>Number</u>	<u>Value</u> (¥ 1000)
<u>Whales Caught in Home Waters</u>				
Sperm	1,208	1,950	1,058	1,974
Sei	445	840	551	1,069
Fin	92	332	125	556
Humpback	57	205	49	220
Blue	7	49	5	40
Right	<u>5</u>	<u>21</u>	<u>2</u>	<u>13</u>
Total	1,814	3,397	1,790	3,872
<u>Whales Caught in Colonial Waters</u>				
Fin	210	807	170	1,046
Humpback	16	44	18	71
Blue	5	28	-	-
Sperm	5	15	-	-
Sei	<u>-</u>	<u>-</u>	<u>1</u>	<u>1</u>
Total	236	895	189	1,118

Source: Far East Yearbook, 1940.

TABLE 37

Japanese Coastal Whaling Operations, 1938

<u>Company</u>	<u>Number of Vessels</u>	<u>Number of Bases^{a/}</u>
Nippon Suisan K. K.	19	24
Hayashikane and Co. Ltd.	4	8
Ayukawa Whaling Co.	1	3
Enyo Whaling Co.	<u>1</u>	<u>4</u>
	25	39

Source: Japan Fisheries Industry, 1939 (Special issue of Japan Times and Mail, 1939).

a/ The number of bases listed is rather misleading because 11 of them were used by two companies, so that the number of separate bases is only 28. Of these 17 were in Japan proper; 5 in the Kuriles; 4 in Korea; and one each in Formosa and Kwantung. The International Whaling Statistics report only 21 bases for this year (Table 34).

Sea Otters and Fur Seals. Sea otters and fur seals are marine animals of the North Pacific valuable for their fur. Normally the Japanese took a small annual catch of each.

Sea otters occur in the Kurile Islands as well as in certain areas of Soviet and American territory. 54/ They are coastal in habit and occur in small groups, in contrast to fur seals which have a large cruising radius and at breeding periods gather in large herds. The Japanese resources, estimated at about 2,500 animals, are considerably larger than that of Russia or the United States and are protected by law (Sea Otter Protection Law of 1911). The number of animals caught and killed each year, regulated by the Ministry of Agriculture and Forestry, was limited according to a policy of conservation and propagation. The annual slaughter was reported as about one hundred animals. 55/

54/ They frequent Soviet areas of Kamchatka and the Commander Islands and American territory of the Aleutians and Alaska.

55/ Japan's Fisheries Industry 1939 (Special issue of Japan Times and Mail, 1939).

Fur seals remain during the summer breeding season in a few locations in high latitudes where it is cool and very foggy. In late fall they migrate long distances southward having a cruising radius of 1,500 - 2,000 miles. The only breeding place in Japanese territory is small Robben Island (also known as Seal Island) off the coast of Karafuto. Formerly the Kurile Islands were the habitat of many seals but these were slaughtered off many years ago. The southward migrations which begin in late fall come as far south as Choshi in the Pacific and as far as Genzan Bay (Korea) and Utsuryoto Island in the Sea of Japan. 56/ From 1911 until 1941 this "fishery" was regulated by an international agreement (see pages 193-194). A report in 1941 indicated that pelagic sealing had been revived along the Pacific coast of northern Japan (Aomori, Miyagi, Fukushima and Ibaraki prefectures).

Pearl Culture. The cultivation of pearls is one of the most spectacular and widely-publicized of Japan's aquatic industries though it is of relatively minor importance. The industry did, however, provide an annual production of pearls and pearlshell valued at more than 2 million yen and is of importance in the export trade.

Statistics from various sources differ considerably as to the number and size of farms and the quantity of production. The publication Japan's Fisheries Industry 1939 in one article gives the number of farms as 12 (including one in the South Seas) with an area of 41,000

56/ Japan's Fisheries Industry 1939 (Special issue of Japan Times and Mail, 1939).

acres producing 5 million pearl oysters, yet in another article refers to 285 places engaged in pearl culture, using 13,000 acres and employing 36,216,000 mother shells. 57/

The industry in Japan proper centers chiefly in the Inland Sea and on inlets of the ocean coasts of southern prefectures. Principal farms were situated on Omura Bay, Nagasaki Prefecture; along the coast of Saga Prefecture; in Heijo, Ago, Kata, Matoya and Mikimoto bays of Mie Prefecture; and Nagao Bay of Ishikawa Prefecture.

Pearl culture has two phases: the rearing of the pearl oyster (akoya-gai) spats; and the rearing of the shell after the insertion of the nucleus. Formerly both phases were conducted by every party but in recent years some pearl culturists purchased mother shells ready for insertion of nuclei. Spats were collected by placing stones in wire baskets along the coast during the laying season, (June and July). The stones with spats were shifted to suitable shallow water sites and after three years rearing were picked up by dredgers or diving girls. Pearl culturists purchased these mother shells, inserted the nuclei and for several years the shells were hung in the sea in fine wire baskets suspended from rafts. They were periodically inspected and tended until maturity when they were collected and opened. 58/ About 60 percent of the treated oysters produced pearls of which only a small percentage were of commercial quality. Pearl shell was a by-product of the industry.

57/ The first set of figures given here may refer to Mikimoto holdings, including the farm in the South Sea Mandated Islands.

58/ The entire process from spats to maturity usually required 6 to 7 years.

Other Products. Shells for buttons and coral are two minor marine products which have been of value in Japanese fisheries. Much of the production of both button shell and coral, however, was not in Japan proper but outlying areas.

III PROCESSING OF FISHERY PRODUCTS

General

Production. The greater part of the fish caught for home consumption was eaten fresh, for no village or town in Japan is so far from the sea that it cannot be supplied with fairly fresh fish. Improved refrigeration made it possible to greatly extend the range of fisheries which could supply truly fresh fish to the large urban markets. Considerable amounts, however, were processed for both domestic consumption and export.

No statistics are available which indicate the percentage of the total catch which was processed, but it is estimated that approximately one-fourth of the fish landed in Japan proper was processed for food. 59/ The volume of the manufactured fishery food products averaged about 525,000 tons in the period 1935 - 1939.

Table 38 summarizes for recent years the quantity and value of the various groups of manufactured fishery products and Table 39 the value of processed products by districts. Table 40 gives the value of the various manufactured food products as compiled by the Ministry of Agriculture and Forestry and Table 41 lists the processing methods for some of the leading marine products.

59/ This estimate is based on the knowledge that in prewar years about a third of the catch was processed into non-edible products (fish meal and oil) and an estimate that 60 - 65 percent of that remaining was consumed fresh.

TABLE 38

Manufactured Fishery Products of Japan ^{a/}

(Quantity in 1000 kan; Value in 1000 yen)

	Total Value	Food Products		Fertilizer		Fish Oils		Dried Seaweed ^{b/}	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1935	175,540	119,240	137,472	99,866	28,552	16,596	8,793	190	723
1936	215,861	132,637	156,144	120,298	37,474	30,079	21,527	190	716
1937	214,871	142,956	163,024	88,985	33,115	24,437	18,002	173	730
1938	241,884	164,363	199,097	64,050	28,990	20,429	13,139	139	658
1939	391,048	140,065	309,811	79,169	55,744	19,854	24,378	174	1,115
1940	445,769	n.a.	369,472	n.a.	58,208	n.a.	16,057	n.a.	2,033

n.a. - not available

Source: Statistical Abstract of the Ministry of Agriculture and Forestry;
Toyo Keizai Nenkan, 1943.^{a/} Agar-agar not included.^{b/} Sukifunori or dried Gelopeltis furcata. Seaweed used for food is included under food products.

TABLE 39

Value of Manufactured Marine Products by Districts, 1937 ^{a/}

Hokkaido	¥ 63,625,600	Kyoto	¥ 2,229,284
Aomori	5,791,336	Osaka	3,543,405
Iwate	6,647,940	Hyogo	3,336,651
Miyagi	14,288,929	Nara	38,276
Akita	506,598	Wakayama	2,646,509
Yamagata	114,856	Tottori	643,481
Fukushima	3,133,734	Shimane	2,193,293
Ibaraki	9,164,063	Okayama	556,105
Tochigi	105,490	Hiroshima	3,405,571
Gunma	40,110	Yamaguchi	4,596,097
Saitama	1,760	Tokushima	1,762,941
Chiba	13,454,803	Kagawa	934,449
Tokyo	12,428,381	Ehime	5,111,209
Kanagawa	2,789,864	Kochi	2,380,099
Niigata	797,378	Fukuoka	3,663,323
Toyama	2,735,894	Saga	1,087,258
Ishikawa	1,510,616	Nagasaki	6,842,472
Fukui	1,119,349	Kumamoto	1,710,143
Yamanashi	2,292	Oita	1,880,572
Nagano	130,586	Miyazaki	1,197,717
Gifu	50,489	Kagoshima	4,957,100
Shizuoka	12,233,923	Okinawa	1,076,545
Aichi	5,058,191		
Mie	4,282,342		
Shiga	54,158		
		Total	215,861,182 ^{a/}

Source: Nippon Suisan Nempō, 1938^{a/} This is slightly higher than the total given in Table 38.

TABLE 40

Value of Manufactured Fishery Products For Food
(1,000 yen)

	<u>Total</u>	<u>Fushi^{a/}</u>	<u>Dried</u>	<u>Salted and Dried</u>	<u>Boiled and Dried</u>	<u>Salt Cured</u>	<u>Smoked</u>	<u>Miscellaneous^{b/}</u>
1935	137,472	14,314	22,306	10,040	22,547	11,859	289	56,117
1936	156,144	17,525	27,264	10,527	23,469	14,559	402	62,398
1937	163,024	16,948	27,124	10,103	21,999	19,313	438	67,098
1938	199,097	17,251	36,103	13,028	28,744	30,073	614	73,282
1939	309,811	29,477	69,421	20,656	48,852	45,635	718	95,052
1940	369,472	35,069	80,417	29,738	63,840	27,837	730	131,841

Source: Statistical Abstract of the Ministry of Agriculture and Forestry;
Toyo Keizai Nenkan, 1943.

a/ Fish meat steamed and dried.

b/ Includes fish boiled down in soy, dried seaweed, etc.

TABLE 41

Methods of Processing Used for Some Important Marine Products

sardine	<u>For food:</u> drying, boiling and drying, salting, salting and drying, canning. <u>Other:</u> processing into meal and oil.
salmon	salting (chiefly chum salmon), drying, canning, freezing, smoking.
cod	salting, salting and drying, drying, smoking, canning (boiled codfish and smoked codfish in oil).
buri (yellowtail)	salting.
mackerel	salting, salting and drying, drying (steaming and drying).
tuna	drying (steaming and drying), canning.
bonito	drying (chiefly for katsuobushi but also for other products).
crab	canning.
swordfish	freezing.
abalone	drying, canning.
scallops	freezing, drying.
cuttlefish	drying.
seaweed	drying.

Persons Employed. Official figures show 207,536 employees and 60,452 employers engaged in processing of marine products in 1940 in Japan. Approximately half of these were employed but part-time in this work (Table 42). The largest number of these were fishermen who also engaged in simple processing -- the drying or salting of fish and the drying of seaweed.

TABLE 42

Persons Engaged in Processing Marine Products, 1936 - 1940

	<u>Employers</u>	<u>Employees</u>		
		<u>Male</u>	<u>Female</u>	<u>Total</u>
<u>Principal Occupation</u>				
1936	24,924	53,658	52,018	105,676
1937	24,441	54,965	54,263	109,228
1938	24,375	52,009	49,010	101,019
1939	24,374	50,867	49,771	100,638
1940	26,124	50,636	54,914	105,520
<u>Subsidiary Occupation</u>				
1936	40,294	36,908	69,501	106,409
1937	36,863	35,175	65,607	100,782
1938	36,953	34,356	65,997	100,353
1939	35,580	32,158	64,701	96,859
1940	34,328	32,662	69,354	102,016

Source: Toyo Keizai Nenkan, 1943.

Although breakdown by type of processing is not available, one source gives the number of persons in Japan proper working in canneries (all types, but fish canning is a principal type of canning in Japan) as 20,700 in 1938 and the number producing aquatic products as 17,400.

These figures probably cover those working in large units but not the large number of small-scale processors. Table 43 summarizes the data available concerning the factory operations.

TABLE 43

Processing of Fishery Products in Factories, 1938

	<u>Canneries</u>	<u>Production of Aquatic Products</u>
Number of factories	642	2,008
Number of operatives	20,700	17,400
Production		
Total, million yen	105 ^{a/}	55
Per factory, thousand yen	164	27
Per operative, yen	5,720	3,160
Working hours, million	59.1	36.0
Wages, million yen	5.6	4.5
Raw material consumed, million yen	151.3	34.7

Source: Orient Yearbook, 1942.

a/ Products of fish and shellfish canning were according to the same source valued at 38 million yen in this year -- more than one-third of the total. Other sources give a much higher production figure for canned fishery products (Table 46).

Drying, Salting and Smoking

About 65 percent of the value of fishery products processed for food was dried, salted or smoked fish (Table 40). Drying, salting and, to a lesser degree, smoking are important in Japan; together with fresh fish, the products processed in these ways formed the bulk of the marine products consumed domestically. Although in the large cities, especially among higher income groups, frozen and canned fish had become familiar items, in the villages and towns and among the masses

in the cities dried and salted fish prevailed and the traditional Japanese cuisine rested upon these products and fresh fish.

Drying included several different techniques: plain drying, boiling and drying, and the steaming and drying of fish meat ("fushi"). Some of the dried fish was flavored before being marketed. These drying methods were used for numerous species including sardines, cod, mackerel, tuna and bonito, cuttlefish and abalone and other shellfish.

The Japanese production of salted fish is classified as "salt-cured" and as "salted and dried." Salting-curing was used for salmon, trout, sardines, cod, yellowtail, mackerel and other species. A combination of salting and drying was also in common use, especially for sardines, mackerel and cod.

Smoking of fish was less common than drying and salting, but was locally important. In a district near Otaru, Hokkaido, for example, salmon was smoked in considerable quantities.

These methods of processing were widespread throughout Japan -- from Hokkaido to southernmost Kyushu. Most of the processing was done by those engaged in fishing whether large companies or individuals. In the Soviet waters, Nichiro Gyogyo K. K. salt cured salmon, but thousands of small fishermen who worked the coastal waters also salted and dried fish. The "factory" in some cases was no more than the beach where fish were laid out to dry; sun-drying was characteristic of the smaller fishing villages throughout Japan.

Freezing

Production of frozen fish which started in the late 1920's has increased greatly in recent years. But even though Japan's freezing, cold storage and refrigerating industry was developed chiefly to be used for fish and shellfish, freezing was still a small industry. According to one source about 60,000 tons of fish were frozen annually -- only about one percent of the total catch. 60/

In 1933 Japan proper is reported to have had 88 freezing plants with a total daily capacity of 860.5 tons (Table 44). Of these, 59 used air (ordinary sharp freezers) and 29 used brine in one manner or another. In addition to these freezing plants in Japan proper, there were four in Kamchatka (plants of Nichiro Gyogyo K. K.) and eighteen on fishing vessels in 1935. Some of these vessels (chiefly trawlers although several "freezing tender ships" of 300 - 1,000 tons) froze fish during the summer months and then docked at Tokyo or other large ports to serve as cold storage depots during the winter months. The total number of freezing plants as of the prewar period may be placed at more than 100 but capacity figures are not available for later than 1933-34 (Table 44).

Canning

Canning was an important method of processing for the export market, but only small amounts of canned fish entered into domestic consumption. It was developed as a means of obtaining foreign exchange

60/ Japan's Fisheries Industry 1939 (Special issue of Japan Times and Mail, 1939).

TABLE 44

Freezing Plants and Capacities

	<u>1933-34</u>	<u>1935-</u>
<u>Japan Proper</u>		
Number of plants	88	-
Capacity (tons)	860.5	
<u>Kamchatka</u>		
Number of plants	2	4
Capacity (tons)	30	40
<u>On vessels</u>		
Number of plants	15	18
Capacity (tons)	45	30
<u>Total</u>		
Number of plants	103	-
Capacity (tons)	935.5	-

Source: Japan's Fisheries Industry 1939 (Special issue of Japan Times and Mail, 1939).

particularly to enable the purchase of industrial raw materials abroad. Because of its commercial importance and large-scale production methods far more information is available concerning the canning of fish than concerning the other processing methods. It should be kept in mind therefore, that despite the details presented concerning canning it is not a leading processing method for the domestic market.

In prewar years Japan produced 5 to 7.7 million cases 61/ of canned marine products valued at 100 - 125 million yen. Approximately 70 percent of this production was for export markets 62/. Salmon, sardines, crab, tuna, mackerel and bonito constituted the bulk of the pack although lesser quantities of herring, shellfish, crustaceans, fish paste and even whale-meat were canned (Table 46).

The Japanese fish canning industry was distributed as follows: 63/

Salmon: Kamchatka, floating canneries, the Kuriles, Hokkaido and northern Honshu.

Crab: Floating canneries (chiefly off Kamchatka) and land canneries in Kamchatka.

Sardine: 64/ Chiefly southern Hokkaido and Aomori Prefecture.

Tuna: Chiefly Shizuoka, Kanagawa, Chiba and Miyagi prefectures.

61/ A case is equal to 46 pounds.

62/ Various sources give figures ranging from 60 - 80 percent. Some canned fish exported directly from floating canneries does not enter into the export statistics but are reported as included in Table 45, which shows that in the period 1930 - 1937 the percentage exported varied from 60 to 83 percent.

63/ Further details are given in the following sections which discuss the canning by types.

64/ Also Korea.

TABLE 45

Production and Export of Canned Marine Products ^{a/}

	<u>Production</u> (cases) ^{b/}	<u>Exports</u> (cases) ^{b/}	<u>Percentage</u> <u>Exported</u>
1930	2,779,266	1,657,342	60
1931	2,137,111	1,307,097	61
1932	2,664,401	1,939,301	73
1933	3,389,087	2,821,076	83
1934	4,297,113	2,914,901	68
1935	4,921,868	3,158,915	64
1936	5,486,160	3,949,725	71
1937	7,735,009	5,103,998	66
1938	n.a.	n.a.	n.a.
1939	6,680,613	n.a.	n.a.

Source: Japan's Canning Industry Since 1930, 1938.
Figure for 1939 from consular report.

n.a. = not available.

^{a/} Includes Japan proper, Karafuto, Korea, Kamchatka and floating canneries. Korean production amounted to about 150,000 - 200,000 cases in the period 1933 - 1936.

^{b/} Cases of 48 pounds.

TABLE 46

Japanese Production of Canned Marine Products

	1937		1939	
	<u>1,000 cases</u>	<u>1,000 ¥</u>	<u>1,000 cases</u>	<u>1,000 ¥</u>
Salmon	2,524	50,953	2,438	58,663
Crab	508	24,423	599	30,140
Tuna	660	8,646	378	5,275
Mackerel	550	4,198	205	1,812
Bonito	235	2,280	225	2,250
Sardine	2,067	13,463	1,550	10,357
Whalemeat	-	-	40	554
Scallop	32	672	28	644
Clam	30	169	244	2,275
Oyster	3	24	3	25
Abalone	43	774	42	819
Shrimp	5	130	7	210
Eel	12	265	23	667
Squid	15	128	13	117
Octopus	17	140	15	165
Fish and other marine paste	75	662	19	152
Herring	<u>a/</u>	<u>a/</u>	95	950
Other	<u>909</u>	<u>11,107</u>	<u>75</u>	<u>10,117</u>
Total	7,735	118,034	6,681	125,192

Source: Consular Report, "Production of Canned Marine Products in Japan Proper," Tokyo, May 8, 1940.

Note: 1938 figures not available.

a/ Not reported separately.

Salmon Canning. About one-third of the Japanese salmon catch is canned to provide an annual pack of more than two million cases during the years 1934 - 1939 (Table 47 and Appendix A). This is almost one-fourth of the world's commercial salmon pack.

Approximately one-half of the salmon pack was from canneries in the Soviet area and about 12 - 15 percent from floating canneries. The rest was divided among plants in the Kuriles, Hokkaido, Karafuto and northern Honshu (Table 47). The location of canneries operating in the Russian area and the northern Kuriles and of floating canneries is shown in Figure 8. Hokkaido plants are reported in Hakodate, Nemuro and Kitami. On Honshu the largest concentration of salmon canning plants was in the area around the city of Aomori on the Gulf of Mutsu. Table 47 shows a total of 94 plants operating in 1936; in 1938, 99 were operating. 65/

TABLE 47

Japanese Canned Salmon Pack, 1936

	<u>Number of Canneries Operated</u>	<u>Production (cases)</u>
Soviet Waters (Kamchatka and Okhotsk)	22	1,094,797
Floating Canneries	3	281,540
Karafuto	9	19,046
Kuriles:		
Northern Kuriles	11	529,709
Etorofu	7	77,338
Japan proper		
Hokkaido	24	127,446
Tohoku (northern Honshu)	<u>18</u>	<u>163,017</u>
Total	94	2,292,893

Source: "The Fishing Industry of Japan," Office of Strategic Services, June 1942.

65/ Appendix A gives the details of the 1936 production, i.e. output by factories and the breakdown by type over a period of years.

The largest part of the Japanese salmon pack was pink salmon; of the 1940 production 61 percent was of this species. Red salmon constituted the second largest pack and silvers, chum and kings made up the remaining portion (Appendix A).

The season of salmon packing was summer varying somewhat, however, with the species and the locality. In general the season for pink salmon was July and August with the peak in late July; for red salmon mid-June to mid-August with the peak the last week of June in eastern Kamchatka and the last week in July in western Kamchatka; for silver salmon from early August to mid-September with the peak in late August; and for chum (ketas) the months of July and August with the peak in late July.

The packing of salmon was as modern well-equipped industry. The fins and heads of the fish were cut off by machines and the gutting and the cutting into pieces for cans were also done mechanically. The pieces of fish were then packed into cans, salt added, and after sealing, the filled cans were heated. Later they were cooled and packed. Much of the canning process was done automatically with conveyor belts, regulated chargers and other modern equipment.

Crab Canning. The total annual production of canned crab in the years immediately before the war reached about 500,000 - 600,000 cases valued at ¥ 24 - 30 million (Tables 48 and 49 and Appendix A). 66/

66/ During the war period production of canned crab has been greatly curtailed. As early as 1939 plans were made to reduce the output (because of the ban on import by foreign countries) and for the 1940-41 season floating canneries were instructed by the Ministry of Agriculture and Forestry to cut production by 40 percent and the Association of Canned Crab Manufacturers on Land planned to cut 32 percent. Since 1942 the commandeering of vessels has reduced if not entirely eliminated this production.

This included the pack of several species, but almost 90 percent of the pack was taraba or king crab. 67/ Japan's crab canneries numbered 51 in a recent year, located as follows: 27 in Hokkaido and the Kuriles, 3 in Karafuto, 9 in Russian territory, 8 factory ships and 4 at "other places." 68/ Locations of those in the northern area operating in 1940 are shown in Figure 8. The production by districts (Table 48) indicates that slightly more than half of the total production in recent years was from floating canneries and that the Kuriles, Karafuto, Hokkaido and Kamchatka each produced approximately one-eighth of the total. 69/ Table 49 with somewhat different figures is included because it gives a further breakdown of the production by districts and Appendix A contains more details of past production.

Crab canning was also seasonal -- from March or April to September. The crabs were processed by first removing the back shell and then boiling or steaming for about 15 or 20 minutes. Dipped in clean water to be cooled they were then cleaned and the flesh pulled from the body and legs. The meat was classified according to quality and condition, then packed in accordance with standards laid down by government regulations into cans of several sizes. Modern equipment characterized both the land canneries and the factory vessels.

67/ Much of the statistical information concerning the Japanese crab pack does not distinguish between figures for all species and those for taraba, the chief species packed. Frequently the figures are only for the latter.

68/ In addition there were 10 crab canneries operating in Korea. Some of the canneries can both salmon and crab and are thus counted twice in the data given.

69/ There was considerable variation from year to year but as a general statement this is true.

TABLE 48

Canned Crab Production of Japan a/
(Cases)

	<u>1935-1936</u>	<u>1936-1937</u>	<u>1937-1938</u>	<u>1938-1939</u>
Karafuto	19,169	22,994	42,780	43,047
Hokkaido and Kuriles				
Nemuro	44,011	39,940	35,577	25,680
Wakkanai	2,536	446	9,291	8,749
Esashi	2,048	-	-	3,821
Rishiri	453	-	-	5,277
Monbetsu	3,893	5,985	9,345	4,301
Abashiri	5,198	3,297	3,716	-
Akkeshi	3,921	2,400	-	-
Kushiro	3,093	4,637	916	-
Ochiishi	11,276	9,394	5,012	-
Kiritappu	5,838	4,116	2,358	-
Tokachi	200	-	-	-
Etorofu	7,543	5,523	2,033	432
Kita-Chishima	36,181	56,182	64,669	38,106
Shiriushi	-	-	-	256
Mainland of Japan	28	45	12	-
Korea	24	79	-	-
Kamchatka	7,344	49,558	53,675	31,139
Floating canneries	<u>183,923</u>	<u>204,719</u>	<u>253,902</u>	<u>204,200</u>
Total	336,679	409,315	483,286	365,008

Source: Consular report, "Economic and Trade Note No. 140," Tokyo, December 19, 1939. Submitted by Donald Lemm, Assistant Trade Commissioner.

a/ Figures reported by Hakodate office of Japan Canned Crab Association stated that these figures are based on calendar year but they are thought to be based on production year. Data is probably for king crab only.

TABLE 49

Canned Taraba Crab Output, 1938
(Cases)

<u>District</u>	<u>Production</u>	<u>Percent</u>
Karafuto	42,780	8.17
Nemuro	42,080	8.04
Wakkanai	9,291	1.77
Monbetsu	16,873	3.22
Abashiri	5,261	1.01
Kushiro	1,687	0.32
Mutafu	4,616	0.88
Otchishi	8,972	1.71
Northern Kuriles (Kita-Chishima)	69,453	13.27
Etorofu	2,517	0.48
Japan Proper	12	-
Kamchatka	55,019	10.51
Floating factories ^{a/}	<u>264,956</u>	<u>50.62</u>
Total	523,517	100.

Source: Japan's Export Trade and Industry, published by Osaka Mainichi, Osaka, October 25, 1939.

^{a/} Eight floating canneries were operated, seven on the west coast and one on the east coast of Kamchatka.

Tuna Canning. A part of the tuna catch is canned; some estimates place it as high as a quarter of the catch but others place it at about 10 percent. In 1937 the canned production was 660,000 cases and in 1939 378,000 cases (Table 46); similar fluctuations occurred in the period 1932 - 1936 and prior to 1932 production was very small.

Tuna canning districts were mainly in Shizuoka, Miyagi, Kanagawa and Chiba prefectures. This is indicated by Table 50 showing the location of the 29 canneries operating in a recent year. 70/ The plants were in districts facing the Pacific -- conveniently situated near the tuna fishing grounds. At least one of the largest tuna factories was in the city of Shimizu. 71/

TABLE 50

Tuna Canneries in Japan a/

	<u>Number of Canneries</u>
Shizuoka	14
Miyagi	5
Kanagawa	4
Chiba	3
Ibaraki	1
Tokyo	1
Fukushima	1
	<u>29</u>

a/ In addition one cannery was operating in Formosa.

70/ Either 1937 or 1938.

71/ This plant has been reported to be producing during the war period exclusively for the Army.

In general tuna canning was during the spring and summer months but it was not completely confined to these seasons. In Shizuoka and Kanagawa prefectures two canning seasons are reported: the first from early January to late March and the second from early May until July with June as the peak season. In Miyagi Prefecture the season was later -- from June to August with mid-June the busiest period.

Tuna canneries, all established relatively recently, were equipped with modern machinery -- automatic cutters, automatic vacuum sealing machines, automatic cooling apparatus, etc. The process was similar to that used in the United States. The heads were cut off and internal organs removed and, after washing, the tuna were steamed for several hours. They were then cooled and bones, scales and other inedible parts removed, leaving only the meat (about 40 percent by weight of the fish as landed) which was cut up and packed in cans. The meat was then classified into grades according to type of meat (white meat made of "binnaga" tuna and light meat made of various kinds) and type of pack (solid, standard and flake). The finished product was inspected by the Tuna Packers' Association of Japan.

Sardine Canning. Of the total annual haul of sardines only a small fraction (about 2 percent) was used for canning and about 80 percent of the canned product was exported. Thus although $1\frac{1}{2}$ to 2 million cases were produced (Table 51) less than 500,000 cases were consumed domestically. Most of the sardines canned were packed in tomato sauce (Table 51).

TABLE 51

1937 Production and Export of Japanese Canned Sardines

	<u>Production</u> (Cases)	<u>Export</u> (Cases)
In tomato sauce	1,381,403	1,325,504
In oil	31,070	29,997
Natural	171,054	155,228
Peppered	128,955	110,795
Seasoned	<u>355,000</u>	<u>13,715</u>
Total	2,067,482	1,635,239

Source: Japan's Fisheries Industry 1939 (Special issue of Japan Times and Mail, 1939).

Sardines were canned chiefly in southern Hokkaido and in Aomori Prefecture. 72/ Recent data concerning the location of factories are not available, but in 1932 there were 13 in Hokkaido, three in Aomori Prefecture, two each in Nagasaki and Yamaguchi prefectures and one each in Osaka and Kyoto prefectures. 73/

The sardine packing season reached its height in Hokkaido and Aomori in November and December although starting in early September. In Nagasaki and Yamaguchi the season was later -- December to April with January and February as the peak months.

Shellfish Canning. Several kinds of shellfish were canned in Japan, but the total production was only about 180,000 - 300,000 cases (Tables 46 and 52) and about half of this was exported. The last two species listed in Table 52 (sazae and akagai) were produced mainly for domestic consumption.

72/ Also in Korea; in 1932 five factories were operating in Korea.
73/ Those in Osaka and Kyoto packed sardines in oil; the others in tomato sauce.

TABLE 52

Output of Canned Shellfish, 1937
(Cases)

Hotate (scallop)	32,000
Hokki	9,500
Asari (baby clam)	19,595
Hamaguri (clam)	4,609
Asari and Hamaguri (seasoned)	25,000
Kaki (oyster)	3,326
Awabi (abalone)	43,000
Sazae (Turbo species)	45,000
Akagai (<u>Anadara inflata</u>)	15,000
	<u>197,030</u>

Fish Meal Production

Fish meal for fertilizer and feed 74/ were manufactured in considerable quantities. Official statistics of the Ministry of Agriculture and Forestry show annual production of fertilizer as varying from 375,000 to 450,000 tons (Table 53). Other sources place the production for fertilizer and feed at 600,000 tons (Table 54). Sardines, herring and codfish supply the largest part of the production; in 1937 sardines accounted for more than two-thirds of the total. Normally a sizeable part of the herring and sardine catches entered directly into this production although some of the fertilizer was made from fish scrap. During the war period production has dropped with the diversion of these products to food uses; 1942-43 production of fertilizer has been estimated at 200,000 metric tons.

74/ Small amounts are used for human food.

TABLE 53

Fish Fertilizer Production
(Quantity in 1000 kan; value in 1000 yen)

	<u>1934</u>	<u>1935</u>	<u>1936</u>	<u>1937</u>	<u>1938</u>
<u>Total</u>					
Quantity	113,071	99,866	120,298	88,985	64,050
Value	28,913	28,552	37,474	33,115	28,990
Herring cake, value	3,319	1,679	1,024	973	960
Sardine cake, value	19,536	18,157	26,715	21,545	18,814
Fish bone cake, value	969	945	1,220	1,688	2,710
Sardine dried, value	1,006	1,194	857	359	430
Herring dried, value	2,163	1,688	1,893	1,370	737
Others, value	1,917	4,836	5,764	7,178	5,337

TABLE 54

Production of Fish Meal, 1937 ^{a/}
(metric tons)

Sardine	430,127
Herring	27,807
Codfish	10,286
Whale	8,509
Flatfish	3,225
Others	<u>120,340</u>
Total	600,294

Source: Japan's Fisheries Industry 1939 (Special issue of Japan Times and Mail, 1939). Data compiled by the Fish Meal Producers and Exporters Association of Japan.

^{a/} These figures are thought to include only Japan proper.

Two processes were used in making fish meal in Japan: sun-drying and machine manufacture. Although some sources give the impression that sun-drying was largely a method of the past, as late as 1939 it was reported that 90 percent of the total production was sun dried. 75/ In this method of production the raw materials were cooked and sterilized, fat and oil extracted by hand presses, and the resulting material was then sun-dried and ground. This type of manufacturing was done in small units; it was really a household industry.

In contrast, in the modern method the materials were handled by machine from start to finish. The continuous machine producer consisted of a cooker, a screw press (for the removal of water and fat), a dryer equipped with a steam jacket, a grinder and a collector, all of which worked in combination. A few of the large plants recently installed are reported to be capable of processing a thousand pounds of raw material daily. Most fish meal plants of Japan had much lower capacities. 76/ Capacity production was reached only at times when the catches of sardines and other fish were abundant.

In 1936 there were reported to be 65 plants producing fish meal including plants in Karafuto, Korea and Soviet territory. 77/ Within Japan proper the leading centers for fish meal production were Hakodate,

75/ The Japan Trade Guide, 1940. This figure may be too high, but large amounts are still processed by sun-drying.

76/ According to the Japan Trade Guide, 1940 the average capacity of plants producing machine-made meal is about 10 - 20 tons daily.

77/ According to another source in 1937 Korea alone had more than 144 sardine pressing plants producing oil and meal. Many of these, however, were very small.

Otaru and Muroran on Hokkaido and Yokohama, Kobe, Yokkaichi and Shimon-oseki on Honshu. The small units producing sun-dried meal were, however, widespread; in general, where transportation facilities were not good or where there was no satisfactory equipment for manufacturing them into food, fish were converted into fertilizers.

The fish meal production, i.e. the commercial industry, was controlled by a government-sponsored Fish Meal Producers and Exporters Association.

Fish Oil Production

Approximately 90 percent of the animal fats and oils and 30 percent of the total fats and oils produced in prewar Japan was from fish and other marine animals. In the period 1934 - 1938 annual production varied from 62,200 to 112,800 metric tons and averaged 83,800 metric tons (Table 55).

TABLE 55

Fish Oil Production in Japan a/

	<u>Quantity</u> (kan)	<u>Value</u> (yen)
1934	22,037,028	8,702
1935	16,595,515	8,793
1936	30,079,000	21,527
1937	24,437,345	18,001
1938	20,428,790	13,138

Source: Japan-Manchukuo Yearbook, 1940.

a/ These figures appear to include Japan proper and Karafuto. Production of Korea and Formosa is not included.

The production in 1936 was about equally divided between the three islands of Honshu, Shikoku and Kyushu, on the one hand, and Hokkaido and Karafuto on the other. One source giving slightly different figures than those in Table 55 reports that of the 105,902 tons of fish oils produced in 1936, 53,700 tons were produced in the three islands, 46,400 tons in Hokkaido and 5,800 tons in Karafuto. 78/

Sardines provided the bulk of the marine oil production, about three-fourths of the production by value (Table 56). The largest part of this production is from whole fish in reduction plants where meal is a joint product.

TABLE 56

Production of Fish Oils by Type in Japan
(yen)

<u>Year</u>	<u>Total</u>	<u>Sardine</u>	<u>Herring</u>	<u>Cod</u>	<u>Whale</u> ^{a/}	<u>Shark</u>	<u>Others</u>
1934	8,702,511	6,416,967	358,551	375,857	408,137	431,096	711,903
1935	8,792,502	6,687,986	165,421	471,265	545,921	724,479	197,431
1936	21,527,114	16,112,027	361,868	1,006,645	2,371,291	1,026,241	649,042
1937	18,001,508	14,272,777	170,818	849,508	1,151,017	947,754	609,834
1938	13,138,868	9,700,667	372,628	641,250	892,373	1,063,795	468,155

Source: Japan-Manchukuo Yearbook, 1940.

a/ Does not include oil from Antarctic catch.

Complete information concerning the location of fish oil plants is not available but plants were known to be producing in the following places: Hakodate and Sapporo in Hokkaido, Kashiwazaki (Niigata Prefecture), Ube (Yamaguchi Prefecture), Fukuoka and Omuda (Fukuoka Prefecture),

78/ Japan's Fisheries Industry 1939 (Special issue of Japan Times and Mail, 1939). These figures do not include whale oil.

Nobeoka (Miyasaki Prefecture), Sendai (Miyagi Prefecture) and Niihama, Ehime and Kochi (Kochi Prefecture). 79/ There were also about a dozen producers of hardened oils (largely fish oils) most of which also produced soap. Normally soap was the principal domestic outlet for hardened fish oil but they were also used for food. 80/

Seaweed Processing

Much of the processing of seaweed was simply that of drying the raw material to be used either as food or for fertilizer (see pages 103 - 107). Other seaweeds, however, undergo more complicated manufacture such as the *Gelidium* species manufactured into agar-agar.

Japanese statistics claim a production of about 25,000 tons of agar-agar (Table 57). Most of this was made from a mixture of several species of *Gelidium* (chiefly *Gelidium amansi*) which was bleached in the sun, then pounded to remove the limy elements and again bleached. This was followed by a 10-hour boiling period during which the agar-agar jelly was dissolved out of the seaweed and put into moulds for congealing. This was then cut into shapes, frozen, drained and air-dried. Agar-agar which was marketed in four forms (bars or squares, strips, powder and "paper") was used in the Far East as a food but in the United States and Europe as a base for the culture of bacteria, in drugs, as a substitute for gelatin or pecten in making puddings and jelly, in starching material

79/ Report of interview with A. R. Goedicke. He reports plants in Korea at Rashin, Seishin, Joshin, Konan and Fusan.

80/ Japanese Trade Studies, Special Industry Analysis No. 15 Fats, Oils and Oil-Bearing Materials (U. S. Tariff Commission), May 1945.

for textiles and for clarifying beer and wine. In prewar years a large part of the Japanese production was exported.

TABLE 57

Agar-Agar Production

<u>Number of Establishments</u>		<u>Production</u>	
		<u>Quantity</u> (kan)	<u>Value</u> (yen)
1934	449	618,841	5,257,378
1935	463	665,000	6,390,315
1936	512	680,000	9,712,497
1937	520	708,203	10,122,783
1938	528	687,731	11,142,642

Source: Japan-Manchukuo Yearbook, 1940.

Manufacture of Other Marine Products

Other manufactures from marine products included vitamin oils from fish livers, pearls, coral and shell buttons and iodine potassium and other chemicals. The manufacture of leather from shark was another minor industry which had developed in recent years.

The cod liver oil industry, the earliest of the vitamin oil industries was some years ago practically confined to Karafuto where 10 small plants accounted for 90 percent of the production. The remainder was produced in a few small islands off Hokkaido.

Recent information concerning the manufacture of vitamin oil is fragmentary. Tuna liver oil for vitamin concentrates was reported produced in Muroto, Kochi Prefecture and three small plants making vitamin oils were operating in the Tokyo area. 81/

81/ Hayashikane Shoten on island in Tokyo River, Mitsui Company at northern edge of Tokyo and a company near Shinagawa according to Mr. Ridlon of Atlantic Coast Fisheries.

IV. MARKETING AND CONSUMPTION

Domestic Marketing and Consumption

Domestic Marketing. Little information is available concerning domestic marketing of marine products. Only the few general statements given here can be made and even these cannot be fully substantiated with details.

Japanese statistics placed the value of marine products consumed domestically in prewar years at ¥ 440,000,000. No figures are available for the volume consumed, but the total domestic disappearance of fish, shellfish, crustaceans and molluscs (in terms of the fresh products) may be estimated at three million tons annually for years immediately preceding the war. Of this amount about 2.2 million tons were consumed as food and the remainder processed into fertilizer and oil.

The larger commercial fishing operators sold domestically to the city markets whereas the village fishermen sold chiefly to the small towns and villages. There were, however, exceptions to this general statement for some groups of village fishermen sold into urban markets.

In the coastal fishing areas distribution to many families was simple -- the fisherman's family ate part of the catch. The major part of the production, however, was transported to markets either by the fishermen themselves or by brokers who went to the coastal villages for the purpose of collecting the products. Some of the small village fishermen sold cooperatively through their village societies (gyogyo kumiai); other fishermen contracted to sell all their catch to companies. The

latter type of marketing was done chiefly in cases where the product was to be canned or otherwise processed and was not very common among fishermen who were producing for domestic consumption.

Fish markets were located in both the productive coastal districts and in the large consuming cities. The total number of fish markets in Japan in 1934 was 934; in addition 253 markets selling fruits and vegetables also handled fish. Thus, there were 1,187 markets handling fish throughout Japan proper in 1934. The ownership of some markets was public, of others private and of still others cooperative. The public markets were municipally operated, most of the private ones were operated by fishery companies and most of the cooperative markets were small ones operated by village fishery associations in the coastal areas.

In 1923 the Central Wholesale Market Law provided for the establishment of markets for fresh foodstuffs (fish, vegetables and fruits). Under this law markets were to be established first in the large urban centers and later in all cities with populations of 100,000 or more. Such central wholesale markets were established in Tokyo, Yokohama, Kobe, Osaka, Kyoto, Kochi, Kagoshima and Sasebo, but apparently none were established in other cities. These central markets were modern with excellent facilities for handling, sales and storage. Space was rented to wholesalers who, conducting their business on a commission basis 82/, sold to brokers who, in turn, sold to retail dealers. The value of fish sold in the city

82/ In prewar years the commission received by wholesalers was about 10 percent.

markets of five of the large cities is given in Table 58. In prewar years the Tokyo central market is reported to have handled 750 tons daily and the Osaka market about 630 tons.

The retailing of fish in the cities and towns was largely through stores. In Tokyo, for example, more than 4,000 stores handled fish in 1935. In the rural areas fish was peddled daily by fish mongers.

In order to provide the large cities with fresh fish, special daily trains were operated between major producing areas and the city markets. For example, fish was quickly dispatched from Shimonoseki, the trawling base, to Kobe, Osaka, Kyoto and Tokyo and from Choshi to Tokyo. In 1937 more than 610,000 tons of fresh fish and 280,000 tons of salted and dried fish were moved on the Japanese railroads. The amounts carried by months in each of the railroad bureaus is given in Table 59.

Prices. Prices of fish and other marine products in Japan during the prewar period are available for only a few items as sold in Tokyo. The wholesale and retail prices for these items are given in Table 60, not as any indication of present prices for the 1945 level is well above that of 1933 - 1935, but as indications of the relative prices of these items. These figures, as yearly averages, do not show the considerable seasonal fluctuation in prices resulting from seasonal differences in supply and seasonal changes in flavor and areas of production. Table 61, giving high and low prices by months for 1937, indicates the seasonal fluctuations in price characteristic of many fish products. The market

TABLE 58

Value of Fish Sold in Major City Markets of Japan, 1937
(1,000 yen)

	Tokyo		Osaka		Kobe		Kyoto		Yokohama	
	Fresh	Salted and Dried	Fresh	Salted and Dried	Fresh	Salted and Dried	Fresh	Salted and Dried	Fresh	Salted and Dried
January	3,468	1,250	2,237	1,645	853	310	796	411	314	154
February	3,069	1,081	2,373	1,127	809	272	739	404	321	155
March	3,546	1,447	2,655	1,319	880	320	848	503	385	160
April	3,574	942	2,694	1,209	909	296	889	474	386	122
May	3,393	1,031	2,762	1,267	937	321	902	478	385	144
June	3,002	956	2,266	1,327	756	309	663	396	354	112
July	2,794	763	2,114	1,256	698	265	592	317	339	114
August	2,575	788	1,953	856	682	281	560	311	345	121
September	3,066	973	2,439	1,277	728	440	620	438	346	122
October	3,395	1,153	2,466	1,905	691	416	626	541	389	149
November	3,711	1,351	2,627	1,857	822	556	697	571	407	209
December	4,255	1,845	3,475	2,568	1,085	571	988	676	427	311
Total	39,855	13,585	30,066	17,618	9,855	4,364	8,926	5,525	3,676	1,893

Source: Nippon Suisan Nempo, 1938.

TABLE 59

Volume of Fish Carried by Railroads in Various Districts ^{a/}
(tons)

	<u>Tokyo</u>	<u>Nagoya</u>	<u>Osaka</u>	<u>Hiroshima</u>	<u>Moji</u>	<u>Niigata</u>	<u>Sendai</u>	<u>Sapporo</u>	<u>Total</u>
	<u>Fresh Fish</u>								
January	2,239	2,597	2,671	11,651	10,821	2,826	6,701	4,117	43,623
February	3,769	2,435	4,796	8,351	9,370	1,056	4,929	5,082	41,788
March	4,747	2,638	7,548	10,517	12,814	2,601	4,922	3,213	49,000
April	4,487	7,909	10,266	8,970	11,038	1,188	3,900	13,762	61,520
May	6,815	5,949	5,999	9,709	9,032	628	6,854	2,343	47,329
June	4,325	7,084	6,675	10,171	7,085	1,705	10,263	2,209	49,516
July	2,038	4,606	1,912	10,961	5,026	594	16,383	3,288	44,808
August	1,444	1,170	1,086	9,307	3,179	499	19,697	2,987	39,369
September	1,261	1,059	1,193	10,567	5,312	251	21,900	6,085	47,628
October	2,061	1,501	2,466	17,051	9,991	243	23,353	9,004	65,670
November	3,456	1,950	2,896	19,961	10,890	190	13,524	7,816	60,683
December	4,707	2,108	2,439	18,597	10,821	2,388	10,479	7,734	59,273
Total	41,349	41,006	51,947	145,818	105,379	14,169	142,904	67,640	610,297
	<u>Salted and Dried Fish</u>								
January	4,008	522	364	1,898	1,225	442	3,869	6,072	18,400
February	3,043	635	288	919	1,074	278	1,383	5,782	13,402
March	2,849	837	367	1,084	1,773	548	794	4,427	12,679
April	5,105	1,480	444	486	1,280	1,104	4,472	16,369	30,740
May	3,277	837	690	856	1,299	408	1,659	12,981	22,007
June	1,018	896	700	1,503	926	82	2,604	18,683	26,412
July	266	581	393	1,274	907	206	3,297	19,846	26,770
August	443	482	763	2,609	1,568	111	6,138	19,218	31,332
September	566	1,338	756	1,517	1,839	275	8,311	9,723	24,325
October	924	1,702	1,325	2,613	2,188	1,131	9,060	9,858	28,801
November	2,675	901	1,323	2,806	1,359	376	5,864	8,460	23,764
December	6,208	1,218	783	3,789	1,992	435	4,989	5,761	25,175
Total	30,382	11,429	8,196	21,354	17,430	5,396	52,440	137,180	283,807

Source: Nippon Suisan Nempo, 1938.

^{a/} The Districts are "railroad bureaus."
The data are probably for 1937.

TABLE 60

Wholesale and Retail Prices of Fish in Tokyo, 1933 - 1935
(Yearly Average)

	Wholesale Prices (¥ per 10 kan)			Retail Prices (¥ per 10 kan) ^{a/}		
	1933	1934	1935	1933	1934	1935
Fresh fish:						
Tai (seabream)	62.13	62.31	67.01	n.a.	n.a.	n.a.
Maguro (tuna)	23.36	23.41	20.72	36.30	47.40	54.00
Buri (yellowtail)	12.47	14.37	14.70	17.3	21.0	22.8
Saba (mackerel)	5.75	5.19	7.01	10.00	10.70	11.40
Salted salmon						
	11.43	10.68	11.35	13.80	14.40	14.30
Dried bonito ^{b/}	121.14	115.65	102.29	123.00	123.10	109.70
Dried cuttlefish	n.a.	n.a.	n.a.	28.70	34.80	43.30
Processed herring						
cake	4.47	4.28	4.85	n.a.	n.a.	n.a.
Tangle						
	n.a.	n.a.	n.a.	33.30	39.20	34.40
Dried laver	n.a.	n.a.	n.a.	23.50	22.00	22.10

Source: Annual Statistical Report of the Tokyo Chamber of Commerce and Industry, 1936.

n.a. - not available.

^{a/} Retail prices were given in terms of units of 375 grams (monme), but converted here for comparative purposes.

^{b/} The wholesale price for dried bonito was given for katsubushi and the retail price for "dried bonito (Izu)"; these may not be strictly comparable.

TABLE 61

Monthly Average Wholesale Prices for Various Kinds of Fish, 1937
(yen per 10 kan)

	Tuna		Tail		Flounder		Bonito		Yellowtail	
	High	Low	High	Low	High	Low	High	Low	High	Low
January	65.20	42.30	125.40	102.80	48.00	32.70	20.40	16.40	31.50	27.20
February	21.50	14.60	145.00	121.00	56.20	45.40	14.10	12.50	17.20	15.50
March	31.37	24.27	137.50	104.00	55.03	38.36	14.53	11.30	13.64	12.69
April	32.43	21.33	102.48	74.76	41.04	28.23	13.30	10.11	12.32	11.81
May	30.13	18.46	66.46	31.16	32.50	22.78	12.39	7.29	12.10	10.43
June	10.56	6.62	47.55	38.29	30.13	22.68	9.95	4.87	8.78	8.10
July	20.95	12.17	63.26	50.76	41.26	34.96	10.22	5.79	8.98	8.54
August	-	-	76.16	59.60	38.00	28.16	14.79	7.44	11.86	11.03
September	30.00	-	116.63	83.45	54.66	44.91	13.58	7.07	16.00	15.00
October	10.25	-	99.54	70.39	48.39	35.72	10.94	7.89	15.66	16.00
November	42.00	38.00	89.44	69.52	42.36	31.06	15.70	13.60	17.00	16.00
December	48.78	32.79	128.58	97.51	46.93	28.45	15.66	12.25	31.53	27.32
Yearly Average	31.20	23.39	100.08	75.27	44.54	32.78	13.80	9.71	16.38	14.97

	Cuttlefish		Octopus		Renkotai		Prawn		Shrimp	
	High	Low	High	Low	High	Low	High	Low	High	Low
January	14.20	12.60	23.50	21.00	26.00	-	161.50	149.00	48.80	43.50
February	13.50	12.00	23.10	20.20	27.80	25.70	189.80	171.70	56.60	47.30
March	14.64	13.85	22.72	21.20	25.22	-	212.83	195.83	72.27	63.33
April	15.20	14.16	21.38	19.90	23.50	-	218.85	187.81	72.37	61.68
May	-	-	21.10	19.65	22.55	19.75	187.83	160.66	55.43	49.50
June	12.66	11.00	20.56	19.23	19.36	-	161.22	135.61	49.52	41.66
July	16.60	11.50	21.72	19.02	17.00	-	148.33	118.00	49.00	44.00
August	17.10	12.95	21.55	19.66	19.00	-	143.83	118.70	48.10	40.36
September	20.37	19.00	17.46	14.10	21.00 ^a	22.00 ^a	164.68	141.39	35.00	21.00
October	14.97	13.34	9.52	8.36	20.43	15.50	152.33	137.18	18.72	16.52
November	13.88	13.29	9.50	7.30	23.00	18.90	145.66	130.33	30.57	28.92
December	16.52	16.00	19.50	9.97	28.43	24.87	162.50	141.25	41.53	38.36
Yearly Average	15.42	13.61	18.55	16.63	22.77	21.12	170.78	148.95	48.16	41.35

Source: Nippon Suisan Nempo, 1938.

^a/ As given in source.

prices of fish, that is the wholesale prices at the central markets, were published daily in the newspapers of the larger cities such as Tokyo, Yokohama, Osaka and Kyoto.

In August 1940 the prices of various foods came under government control and since that time the prices of many marine products have been controlled by the Ministry of Agriculture and Commerce through various of its wartime agencies (see pages 205 - 206).

Consumption. The importance of fish in the Japanese diet is far greater than in other countries for it is the major source of animal protein and also a leading source of fat. In the preponderantly starchy Japanese diet, which according to nutritionists has only "adequate" protein and is notably deficient in fat, fish is an essential item. Fish did not replace rice as the basis of a meal and was not normally consumed as a bulk food. 83/ The amount actually served at a meal seems trifling by Western standards, but because of its nutritional importance, fish is almost as indispensable as rice.

Per capita consumption of fish, shellfish, crustaceans and molluscs for food was probably about 65 pounds per year in terms of fresh fish. 84/

83/ This is even true in the coastal fishing villages.

84/ Prewar per capita consumption figures of fish in Japan vary greatly -- estimates from 40 to 160 pounds have been made with those between 50 and 110 pounds most common. These wide variations are understandable and not necessarily incompatible when one considers differences in meaning of "per capita consumption" and the difficulties of computing such a figure from the available statistics. In many cases the estimate does not make it clear whether the figure refers to the total per capita disappearance of all marine products (edible and inedible) in terms of the weight as captured, whether it refers to the consumption only for food, or whether it refers only to the weight of the edible portions of fish used directly as food. Since much of the Japanese catch was used for the

This may be compared with estimates of about 15 pounds for the United States, 25 pounds for Germany and 38 pounds for Great Britain. Whereas in many Western countries the per capita consumption of meat reaches more than a hundred pounds per year, in Japan it has been estimated at about four pounds. Thus fish takes the place of meat in the diet.

Wartime consumption has decreased greatly. On the basis of an estimated catch of 1,750,000 tons for last year and the assumption that almost all the fish caught was used as food, consumption for 1944-45 is estimated at about 40 pounds. This figure may be too high as part of this catch probably went into government stockpiles. Further reductions in production during more recent months may mean that average consumption has dropped still lower.

Japanese ideas concerning fish are radically different from those of Westerners who regard meat as of higher quality; Japanese in general prefer fish to meat regardless of price. Whereas Westerners know only a relatively small number of fish, the Japanese used more than 400 kinds of fish and shellfish for food purposes. Table 3 (page 28) names the most important of these; locally many other kinds were in common use.

production of fertilizer and oil and since there was also much waste in processing (or even in fish eaten fresh) the "per capita consumption" varied greatly in accordance with the concept used.

The following figures are presented here as estimates of the prewar (1936 - 1938) consumption:

	<u>Per capita</u> (pounds)
Total consumption (all uses) of fish, shellfish and crustaceans in terms of weight as captured	92 - 105
Consumption of fish, shellfish and crustaceans for direct food purposes in terms of weight as caught	60 - 70
Consumption of fish, shellfish and crustaceans in terms of edible portions	37 - 42

Fresh, salted, dried, smoked and canned fish were consumed. The largest amount was used fresh -- possibly 60 - 65 percent of that consumed as food. The chief forms of processed fish used domestically were dried and salted. Smoked fish was less commonly used and canned fish was consumed in relatively small quantities by the Japanese population. In recent years canned fish was on the increase among the wealthier people in urban centers, and during the war the canned fish which would normally have entered export channels has been used by the Army. In spite of this increased use of canned fish it cannot be emphasized too strongly that the bulk of the fish consumed by the Japanese population was fresh, salted or dried. Fish was eaten raw, boiled, broiled, fried or in soups and sauces.

Consumption of fish meal may be estimated at about 500,000 tons in prewar years and consumption of fish oils at about 75,000 - 1000,000 tons. 85/

Balance of Supply. Although marine products were produced throughout all parts of Japan proper, the regional output was not in accordance with the demand. Hokkaido and northeastern Honshu constituted a major surplus region whereas much of northwestern, central and southern Japan was deficient in fish. Within these latter areas, however, there were surplus producing districts some of which, Nagasaki for example, had large surpluses. Table 62 and Figure 9 show the surplus and deficit areas within Japan proper in 1939, based on the production of coastal fishing and deep-sea fishing in home waters. These fisheries together with aquiculture approximately provided the amount consumed within Japan proper during the prewar period.

85/ Although Japan imported large amounts of fish oils from Korea, exports of these products about equalled imports so that consumption approximated home production.

JAPAN

FISH PRODUCING AREAS, 1939

FOREIGN ECONOMIC ADMINISTRATION

PREFECTURES

KYUSHU

1. Kagoshima
2. Miyazaki
3. Kumamoto
4. Nagasaki
5. Saga
6. Fukuoka
7. Oita

SHIKOKU

8. Ehime
9. Kochi
10. Tokushima
11. Kogawa

HONSHU

12. Yamaguchi
13. Shimane
14. Hiroshima
15. Okayama
16. Tottori
17. Hyogo
18. Kyoto
19. Osaka
20. Wakayama
21. Nara
22. Mie

23. Shiga
24. Fukui
25. Ishikawa
26. Toyama
27. Gifu
28. Aichi
29. Shizuoka
30. Yamanashi
31. Nagano
32. Niigata
33. Gumma
34. Saitama
35. Tokyo
36. Kanagawa
37. Chiba
38. Ibaraki
39. Tochigi
40. Fukushima
41. Yamagata
42. Miyagi
43. Iwate
44. Akita
45. Aomori

HOKKAIDO

46. Hokkaido

ADMINISTRATIVE REGIONS

- I Hokkai
- II Tohoku
- III Kanto
- IV Tokai
- V Kinki
- VI Chugoku
- VII Shikoku
- VIII Kyushu

LEGEND

SURPLUS AREAS

- More than 50,000 ton surplus
- 15,000-50,000 ton surplus
- Less than 15,000 ton surplus

DEFICIT AREAS

- More than 50,000 ton deficit
- 15,000-50,000 ton deficit
- Less than 15,000 ton deficit

- Prefectural Boundaries
- Regional Boundaries

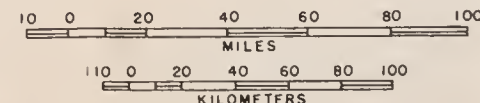


TABLE 62

Estimated Surpluses and Deficits of Fish by Regions, 1939
(1,000 metric tons)

	<u>Total</u> <u>Production</u> a/	<u>Estimated</u> <u>Consumption</u> b/	<u>Estimated Surplus</u> <u>or Deficit</u> + Surplus - Deficit
Hokkaido	994.9	96.8	+ 908.1
<u>Tohoku</u>			
Aomori	108.4	30.6	+ 77.8
Akita	10.3	32.1	- 21.8
Iwate	98.8	32.7	+ 66.1
Yamagata	6.8	34.2	- 27.4
Miyagi	73.8	38.7	+ 35.1
Fukushima	96.9	48.8	+ 48.1
Total Tohoku	395.0	217.1	+ 177.9
<u>Kanto</u>			
Niigata	26.0	61.0	- 35.0
Tochigi	.5	36.8	- 36.3
Ibaraki	69.1	47.6	+ 21.5
Chiba	181.2	47.8	+ 133.4
Gunma	.2	38.3	- 38.1
Saitama	.3	47.2	- 46.9
Tokyo	17.3	208.9	- 191.6
Kanagawa	24.2	59.3	- 35.1
Yamanashi	.1	19.7	- 19.6
Nagano	1.1	51.4	- 50.3
Total Kanto	320.0	618.0	- 298.0
<u>Tokai</u>			
Shizuoka	95.2	60.8	+ 34.4
Aichi	23.2	91.4	- 68.2
Mie	48.7	35.5	+ 13.2
Gifu	1.0	37.7	- 36.7
Toyama	38.8	24.3	+ 14.5
Ishikawa	57.3	23.3	+ 34.0
Total Tokai	264.2	273.0	- 8.8

TABLE 62 (Continued)

Estimated Surpluses and Deficits of Fish by Regions, 1939

	<u>Total</u> <u>Production</u> a/	<u>Estimated</u> <u>Consumption</u> b/	<u>Estimated Surplus</u> <u>or Deficit</u> + Surplus - Deficit
<u>Kinki</u>			
Shiga	4.5	21.7	- 17.2
Fukui	23.1	19.9	+ 3.2
Kyoto	26.3	53.9	- 27.6
Nara	.2	19.1	- 18.9
Wakayama	22.7	26.5	- 3.8
Osaka	9.4	142.9	- 133.5
Hyogo	39.9	92.8	- 52.9
Total Kinki	126.1	376.8	- 250.7
<u>Chugoku</u>			
Tottori	9.7	14.7	- 5.0
Okayama	10.3	40.9	- 30.6
Shimane	37.5	22.6	+ 14.9
Hiroshima	16.7	56.2	- 39.5
Yamaguchi	101.9	36.7	+ 65.2
Total Chugoku	176.1	171.1	+ 5.0
<u>Shikoku</u>			
Kagawa	10.2	22.8	- 12.5
Tokushima	12.9	22.1	- 2.9
Ehime	59.8	35.4	+ 24.4
Kochi	40.0	21.4	+ 18.6
Total Shikoku	129.3	101.7	+ 27.6
<u>Kyushu</u>			
Nagasaki	215.2	40.1	+ 175.1
Saga	24.9	20.5	+ 4.4
Fukuoka	88.4	86.9	+ 1.5
Oita	20.5	30.1	- 9.6
Kumamoto	15.8	42.2	- 26.4
Miyazaki	27.7	25.9	+ 1.8
Kagoshima	65.3	48.4	+ 16.9
Total Kyushu	457.8	294.1	+ 163.7

TABLE 62 (Continued)

Estimated Surpluses and Deficits of Fish by Regions, 1939

	<u>Total</u> <u>Production</u> a/	<u>Estimated</u> <u>Consumption</u> b/	<u>Estimated Surplus</u> <u>or Deficit</u> + Surplus - Deficit
Okinawa	7.1	18.1	- 11.0
Total	2,870.6	2,166.7	+ 703.9
Aquiculture estimated production	<u>119.0</u>		
	2,989.6	2,166.7	+ 822.9 c/

a/ Production of coastal waters and deep-sea fisheries in home waters as given in Table 11.

b/ Population (1938 estimates) multiplied by 30 kilograms (66 pounds), estimated prewar per capita consumption. This assumes uniform consumption throughout Japan.

c/ This is approximately the amount which was used for fertilizer and fish oil.

Exports. Despite Japan's high domestic consumption, fishery products also entered into its export trade. Certain fisheries, such as the Northern fisheries and Antarctic whaling, produced primarily for foreign markets, but the total amount of fishery products exported was only a small part of the total Japanese production -- probably about 10 percent by volume. Many of these export products, however, were of relatively high value compared to those consumed domestically and they provided Japan with desired foreign exchange. In the period 1935 - 1939 annual exports of fish and fishery products (food, oil, meal etc.) averaged more than 100 million yen and in 1939 was more than 175 million yen (Table 63). Although this was but 4 - 5 percent of the value of all exports, as a group, these commodities were second only to textiles (yarns and piece goods of cotton, silk, rayon and wool).

During the war period the exports of fishery products to Western countries largely stopped due to boycotts and the reduced production. The canned packs, smaller than in prewar years, have been used for the armed forces and for stockpiling. The trade with Asiatic areas, especially those under Japanese control, probably continued insofar as shipping has permitted.

86/ Appendix B contains statistical details of Japan's foreign trade in fishery products as recently compiled by the U. S. Tariff Commission. Much of the material in this section is based on its report "Japanese Trade Studies -- Special Industry Analysis No. 27 -- Marine Products," August 1945.

The great variety of fishery products exported in prewar years is indicated by Table 63. The exports may, however, be divided into two broad groups: (1) those which found markets in Western countries, particularly the United States, United Kingdom and other European countries; and (2) those generally taken by Oriental countries including countries in the Japanese sphere of influence. The first group consisted predominantly of canned fish and shellfish but also included frozen fish, fish meal fertilizer and fish and whale oil; the second group consisted largely of dried and salted products.

Canned Fish. Canned fish accounted for about half of the value of fishery exports, being valued at more than 65 million yen in 1938 and 1939. The relative importance of canned products exported was as follows: 87/

<u>Product</u>	<u>Quantity Percent</u>	<u>Value Percent</u>
Salmon and trout	50	54
Crab meat	9	21
Sardines	27	12
Tuna	4	6
Other	10	7
	<u>100</u>	<u>100</u>

Exports of canned salmon in 1938 amounted to 51,000 tons valued at 38 million yen (Appendix B). United Kingdom took 68 percent of the quantity and 79 percent of the value of these exports, with other European countries and Australia accounting for most of the remainder.

87/ "Japanese Trade Studies -- Special Industry Analysis No. 27 -- Marine Products," U. S. Tariff Commission, August 1945.

TABLE 63

Japanese Exports of Fishery Products by Value, 1938 and 1939 ^{a/}
(1,000 yen)

	<u>1938</u>	<u>1939</u>
Canned foods:		
Crabs	15,244	30,323
Salmon	28,383	27,092
Trout	10,079	8,907
Tuna	4,067	8,860
Sardine	7,543	7,922
Mackerel	680	872
Shellfish	<u>1,842</u>	<u>2,732</u>
Total canned foods	67,838	86,708
Dried fish and shellfish	7,648	23,916
Salted fish	3,331	13,150
Fresh fish and shellfish	6,672	9,624
Kombu (Laminaria)	2,638	7,342
Fish livers	-	6,047
Amanori (Porphyra)	791	1,389
Roasted fish	811	1,153
Agar-agar	6,201	8,144
Fertilizer:		
Fish powder	5,182	4,515
Sardine	4,506	4,188
Fish oil	4,348	5,277
Hardened fish oil	4,333	3,831
Shell	<u>1,336</u>	<u>667</u>
Total	115,635	175,251

Source: Japan Yearbook, 1940-41.

^{a/} These figures do not include exports to Korea, Formosa and other Empire areas. Canned fish and shellfish exported directly from the Northern fisheries and whale oil exported directly from Antarctic operations not reported in official statistics, are also omitted here.

During the five years ended in 1939 Japanese exports of canned crab averaged nearly 12,000 tons valued at slightly more than 20 million yen (Appendix B). These exports, which were more than 90 percent of the production, went largely to the United States (57 percent) and United Kingdom (28 percent).

Exports of canned sardines amounted to about 35,000 tons in 1937 but dropped to 23,000 - 26,000 tons in 1938 and 1939. Although Japanese sardines were shipped to practically all countries of the world Asiatic countries were the principal markets -- the Philippine Islands, Netherlands Indies, the Straits Settlement and British India (Appendix B).

Annual exports of tuna from Japan for the five-year period ended 1938 averaged more than 5,000 tons valued at more than 5 million yen. The United States was the leading market taking about two-thirds of the total.

Salted Fish. Total exports of salt fish were valued at about 2.6 million yen in 1936, or about 10 percent of production. These consisted of salmon, trout and cod shipped to Asiatic countries.

Dried Fish. The more important exports of this group were dried cod, dried shellfish and dried seacucumbers. Asiatic markets predominated (Appendix B).

Seaweeds. Exports of seaweeds were largely vegetable isinglass (agar-agar), tangles and dried laver (Appendix B). In 1938 these exports were valued at 9.6 million yen with vegetable isinglass accounting for 65 percent of the total. The United States, France, Germany and the United Kingdom took most of the vegetable isinglass which was

produced primarily for export. Only a small percent of the tangles and laver entered into foreign trade; China, Kwantung and Manchuria (Manchukuo) were the chief markets for these products.

Fish Meal. In recent prewar years Japan produced from 50,000 - 100,000 metric tons annually for export markets. More than half of the exports were shipped to the United States with European countries (principally the Netherlands, the United Kingdom and Germany) the next most important markets (Appendix B).

Fish and Whale Oil. Exports of fish oils (including hardened fish oil) amounted to about 60,000 to 100,000 tons in 1937 and 1938 (Appendix B). In addition most of Antarctic whale oil production was sent abroad, in 1938-39 about 70,000 tons of the 80,600 tons produced being exported.

Fresh and Frozen Fish. These exports represented a minor part of the total trade in marine products. The United States took about half of the quantity and slightly more than half of the value of these exports. Seed oysters, live goldfish, frozen fish livers, frozen tuna and swordfish were the products exported to the United States. Nearby China and Kwantung were the other important markets for fresh and frozen fish (See Appendix B).

Imports. Japanese imports of fish and fishery products were relatively small compared to the total production of fisheries based on Japan proper, and were also considerably less than the exports of

these products. 88/ In 1938 imports were valued at 52 million yen whereas exports were more than 125 million yen. Largest imports were from colonial areas, chiefly Korea; foreign countries provided only a negligible quantity.

During the five years ended 1940 exports of fishery products from Korea to Japan proper averaged about 240,000 metric tons (Table 12 Appendix B). Only about 25 percent of this, however, was fish and shellfish for food purposes; most of the remainder was refuse material for meal and oil manufacture and the processed meal and oil. Statistical data are not available for the imports of fishery products into Japan proper from Karafuto, Formosa and the Japanese Pacific islands although these colonial areas are known to export to the home country. The Karafuto production of canned fish was largely exported to non-Japanese areas, but part of Karafuto's surplus dried and salted fish was probably consumed in Japan proper. Some of the Pacific islands produced surpluses of dried bonito and tuna, part of which was consumed within Japan.

About half of the imports from foreign areas were non-edible products -- mollusc shells, tortoise shells, sponges and fish guano (Appendix B). Of the imports from foreign countries for food purposes the Soviet Union was the chief provider.

During much of the war period colonial imports may have remained fairly high although the small imports from foreign countries practically ceased. In recent months, however, imports from colonial areas also declined greatly.

88/ Because of the type of statistical data available it is impossible to make a satisfactory estimate of the volume of imports vs. exports, but a consideration of the production and trade statistics indicates a sizable surplus of exports by volume and a domestic consumption in the neighborhood of three million tons of fish, shellfish, crustaceans and molluscs (in terms of fresh product), the consumption figure used throughout this report.

V. ADMINISTRATION AND ORGANIZATION OF THE INDUSTRY

Government Administrative Organization

Central Government. The central governmental administration of the Japanese fishing industry in prewar years was through the Fisheries Bureau (Suisan Kyoku), one of the six bureaus of the Ministry of Forestry and Agriculture (Norinsho). ^{89/} This bureau exercised control over all aspects of the industry although much of the administrative and supervisory work was delegated to prefectural governments and various associations. It licensed and directly administered certain fisheries (see page 168); carried out the regulation of international treaties; supervised and aided the various societies and associations, carried on research; provided for the protection and propagation of fish; and published the national fisheries statistics.

In 1938 the bureau contained five sections, two of which were the Fisheries Administration Section and the Fishing Boat Insurance Section. One source names two of the other sections as the Fisheries Superintendence Section and the Aquiculture Section whereas another source reports the remaining three sections to have been the Ocean (High Seas) Fishing Section, the Marine Products Section and the Control Section. The Imperial Fisheries Institute, a government school, is really a part of the Fisheries Bureau.

^{89/} In late 1943 in a wartime government reorganization parts of two Ministries — Agriculture and Forestry and Commerce and Industry — were consolidated to form a new Ministry of Agriculture and Commerce (Noshosho). The Fisheries Bureau is thought to have been transferred intact to this new ministry.

Prefectural Government. Much of the actual regulation of the fisheries was handled by the prefectural governments. Through authority given them by the central government they promulgated and enforced laws relating to fishing and regulated the various societies concerned with the industry. They licensed fisheries under their jurisdiction (see page 168) and also engaged in research, conservation measures and educational work.

These activities were handled under the "economic sections" of the prefectural governments. In 1939, 23 of the coastal prefectures where fishing was a major industry had separate fisheries divisions within the economic sections; the other prefectures had no separate fisheries division, but all had officials who were concerned with the industry.

Governmental Activities 90/

Licensing. All Japanese fishing was licensed -- some types by the central government and others by the prefectural governments. By the Fishery Law of 1901 "licensed fishing" was established according to four categories: (1) "exclusive right" fishing; (2) "fixed place" fishing; (3) "limited sphere" fishing; and (4) "special" fishing. The first type of license, that of "exclusive right," provided the right to fish within given areas to the exclusion of all others by methods not included in the other three classes. These licenses were granted only to fishermen's societies (Section 4 of the Fishery Law, Appendix C) which settled among

90/ See Appendix C for laws and regulations relating to fisheries.

their members the rights grantable to individual fishermen. Fishing in "fixed places" included operations by fish traps, pound nets and weirs; fishing in "limited sphere" denoted areas in which marine products such as oysters and seaweed are grown; "special fisheries" included whaling and other fishing for which special licenses were issued. Fishing of these various categories were greatly intermingled; these rights often contiguous, commingled or even conflicting are reported to have been mapped and registered by the prefectural governments. Table 64 gives the number of licenses of each type by districts for 1937.

"Exclusive right" fishing was licensed by the prefectural governments. "Special" licenses, which in 1939 included those for whaling, trawling, sealing and floating cannery operations, were issued by the central government. The other two categories are thought to have been licensed by the prefectural governments although no direct statement to this effect was found; at least prefectural governments are reported to have records and maps indicating the location of all such fisheries.

Taxation. Taxes were prefectural and differed from district to district. They were levied as a license fee for the particular classes of fishing, as rental for particular areas or as direct taxes on boats, nets, persons or "fishing households."

Conservation Measures. Both the central government and prefectural governments issued orders and regulations designed as conservation measures. Those issued by the central government dealt with whaling, sealing, trawling and crab fishing whereas those issued by the prefectural

TABLE 64

Number of Fishing Licenses by Districts at End of March, 1937

Prefecture of Fu	Total Number of Licenses	"Exclusive Right" Licenses ^{a/}				Fixed Place Licenses	Limited Sphere Licenses	Special Fisheries Licenses
		Waterfront type	Customary Prac- tice type	Unclass- ified	Total			
Hokkaido	9,510	172	-	-	172	8,854	37	15,319
Aomori	1,114	84	45	-	129	959	11	15
Iwate	720	38	38	-	76	406	172	66
Miyagi	1,378	79	30	-	109	588	660	21
Akita	943	45	34	-	79	519	199	146
Yamagata	438	32	7	-	39	206	71	122
Kanagawa	323	36	1	-	37	141	79	66
Ibaraki	645	42	8	-	50	449	56	90
Tochigi	51	4	-	-	4	-	47	-
Gunma	67	7	4	-	11	36	20	-
Saitama	79	3	-	-	3	5	71	-
Chiba	657	86	76	6	168	199	260	20
Tokyo	268	49	15	-	64	13	179	12
Fukui Kawa	467	68	19	-	87	131	147	102
Niigata	1,028	140	90	2	232	499	12	285
Toyama	747	20	75	-	95	375	15	262
Ishikawa	1,677	76	66	-	142	1,428	34	73
Fukui	858	47	72	-	119	558	15	166
Yamanashi	32	2	1	-	3	25	4	-
Nagano	42	11	-	-	11	25	6	-
Gifu	102	4	-	-	4	89	6	3
Shizuoka	952	145	75	-	220	213	131	388
Aichi	955	104	41	-	145	455	229	126
Mie	1,431	33	219	-	252	292	223	664
Shiga	718	-	1	-	1	531	55	131
Kyoto	730	40	23	-	63	386	6	275
Osaka	71	25	11	2	38	23	3	7
Hyogo	1,341	42	108	-	150	675	185	331
Nara	11	1	-	-	1	10	-	-
Wakayama	1,307	92	48	1	141	373	239	554
Tottori	133	35	9	-	44	67	10	12
Shimane	887	68	108	-	176	224	57	430
Okayama	1,473	38	40	-	78	1,008	187	200
Hiroshima	4,559	111	48	2	161	839	2,484	1,075
Yamaguchi	3,094	84	114	-	198	974	115	1,807
Tokushima	510	27	46	-	73	272	25	140
Kagawa	2,244	46	85	1	132	1,126	519	467
Ehime	4,632	109	287	3	399	915	93	3,225
Kochi	786	79	60	-	139	263	48	336
Fukuoka	1,114	22	73	-	95	635	234	150
Saga	898	34	1	-	35	231	460	172
Nagasaki	2,756	250	179	-	429	1,168	123	1,036
Kumamoto	1,100	86	26	-	112	307	173	508
Oita	1,946	76	53	-	129	873	62	882
Miyazaki	509	10	19	-	29	312	45	123
Kagoshima	866	92	17	1	110	362	21	373
Okinawa	102	44	6	-	50	45	6	1
Total	56,271	1,738	2,278	18	5,034	28,084	7,834	15,319

Source: Nippon Suisan Nempo, 1938.^{a/} Granted only to fishermen's societies (gyogyo kumiai).

governments dealt with local coastal depletion. These included strict licensing, restrictions on use of some gear. Propagation of fish and the stocking of rivers and lakes was carried out in some prefectures by the government. Hatcheries, both government-owned and private, were regulated.

Aid to Societies and Associations. Societies and their federations were encouraged and aided by the government at both levels. Subsidies have been given to certain activities carried out by these organizations. The associations were likewise encouraged and aided.

Research Activities. Both the central government and the prefectural governments were active in fishery research. The central research body was the Fisheries Experimental Station at Tokyo. There were 87 well-equipped fisheries experiment stations in the Empire, including the colonies. Research in oceanography was promoted by the large number of vessels operated out of government research stations. Training and research were combined on many such vessels.

Bounties, Subsidies and Other Governmental Aid. Table 65 summarizes the expenditures of the central government for aid to the fishery industry for 1932-33 to 1934-35, the latest years for which such data are available. Assistance may be divided into direct bounties and subsidies and indirect assistance.

Direct aid has included money granted for deep-sea fisheries, repair of vessels, cold storage facilities, manufacturing and various cooperative undertakings. Assistance of this type was usually extended

TABLE 65

Japanese Governmental Expenditure for Fisheries, 1932-33 to 1934-35
(1,000 yen)

	<u>1932-33</u>	<u>1933-34</u>	<u>1934-35</u>
<u>Bounties and Subsidies:</u>			
<u>Direct assistance:</u>			
Pelagic fisheries	233	232	232
Repair of vessels	120	20	35
Cold-storage facilities	650	233	138
Cooperative activities	233	225	225
Other	<u>364</u>	<u>258</u>	<u>221</u>
Total	1,600	968	851
<u>Indirect assistance:</u>			
Home market promotion	15	12	12
Promotion of exports	11	68	67
Regional assistance	<u>227</u>	<u>86</u>	<u>93</u>
Total	253	166	172
Total bounties and subsidies	<u>1,853</u>	<u>1,134</u>	<u>1,023</u>
<u>Other Government Aid:</u>			
<u>Facilitation services:</u>			
Research	800	1,081	772
Fish propagation and conservation	374	378	434
Port facilities	5,662	11,353	4,361
Other	<u>36</u>	<u>70</u>	<u>76</u>
Total	6,873	12,882	5,643
Administrative expenditures:	573	612	451
Total other government aid	<u>7,446</u>	<u>13,494</u>	<u>6,094</u>
GRAND TOTAL	9,300	14,628	7,117

Source: Report to the United States Senate on Subsidies and Bounties to Fishery Enterprises by Foreign Governments, Report No. 116, Second Series, U. S. Tariff Commission, 1936 (Section on Japan).

to various societies and associations rather than to individual fishermen.,

Indirect assistance was given by promoting marketing at home or abroad, granting appropriations to prefectural governments for regional use, and expenditures for research, fish propagation and port facilities.

Societies and Cooperatives

The Japanese fishermen and others interested in the industry were organized into three types of societies: 91/ fishery societies (suisan-kai), aquatic products societies (suisan-kumiai), and fishermen's societies (gyogyo-kumiai). All three types had official status and were set up pursuant to special laws. The government, both central and prefectural, assisted and regulated their activities. Societies of each type were also coordinated into federations or into prefectural and national societies.

Fishery Societies (Suisan-kai). These were organizations which were formed according to the provisions of the Suisan-kai Law of 1921, consisting in immediate prewar years of about 300 local societies covering city or county units and 40 prefectural societies organized by the city and county societies (Table 66). These local societies were coordinated and controlled by the Imperial Fishery Society (Teikoku Suisan-kai). 92/

91/ In many sources these organizations are referred to as "associations", "guilds" etc. The English names as given here with the Japanese names are used throughout this report.

92/ In some sources called the National Association of Fisheries.

TABLE 66

Societies Concerned with the Fishing Industry: Number, Members and Expenditures,
1928, 1930 and 1934-37

	1928	1930	1934	1935	1936	1937
<u>Fishery Societies (Suisan-kai)</u>						
Number of Societies:						
Total	371	377	345	344	344	343
County and City Societies	331	337	305	303	303	302
Prefectural Societies	39	39	40	40	40	40
Imperial Fishery Society (Teikoku Suisan-kai)	1	1	1	1	1	1
Number of Members:						
County and City Societies	440,511	457,298	450,696	444,135	447,496	448,452
Prefectural Societies	330	334	296	294	299	296
Imperial Fishery Society	42	42	42	43	43	43
Expenditure of Societies (yen)	2,037,451	1,899,844	1,644,675	1,545,577	1,672,326	2,063,959

<u>Aquatic Products Societies (Suisan-kumiai)</u> ^{a/}						
Number of Societies and Federations:	47	48	68	67		
Societies and Federation under Fishery Law	46	47	67	66		
Societies	45	46	66	65		
Federations	1	1	1	1		
Societies and Federation under law relating to societies in foreign waters ^{b/}	1	1	1	1		
Number of Members:						
Societies under Fishery Law	52,441	51,241	42,513	45,937		
Federations under Fish- ery Law	3	3	3	3		
Societies under law re- lating to societies in foreign waters	39	130	37	27		
Expenditure of Societies and Federations (yen)	803,796	776,634	1,051,541	1,303,201		

<u>Fishermen's Societies (Gyogyo-kumiai)</u>						
Number of Societies class- ified by number of members						
Total	3,870	3,874	3,994	4,000	3,998	4,016 ^{c/}
Less than 50	1,287	1,239	1,257	1,223	1,198	
51 - 100	938	913	923	933	928	
101 - 200	919	957	973	1,694	1,719	
201 - 500	619	649	692			
501 - 1,000	93	100	124	124	123	
More than 1,000	14	16	25	26	30	
Number of Members of Societies	509,863	526,579	574,328	580,103	594,710	605,010
Federations of Societies						
Number of Federations	48	61	72	74	80	89
Number of Member Societies	636	830	926	941	975	1,596

Source: Statistical Abstract of the Ministry of Forestry and Agriculture, 1936-37 and Japan Yearbook, 1940-41.

a/ Data not available for 1936 and 1937.

b/ The one society in this category is the Aquatic Products Society of Russian Waters (Roryo Suisan-kumiai).

c/ Breakdown is not available.

Members of these fishery societies included not only persons engaged in fishing but those who manufactured, traded in or stored fishery products. The functions are said to have included "encouragement of fisheries, improvement and extension of the manufacture of marine products, development of fishing districts and protection of aquiculture." They also looked after the rescue of shipwrecked vessels, worked in the field of labor relations and engaged in educational work through lectures and exhibitions. These societies have been used by the central government to finance and improve fishery methods and to collect statistics.

Aquatic Products Societies (Suisan-kumiai). 93/ These were organizations of fishermen and persons engaged in the manufacture or sale of aquatic products, formed under the Fishery Law of 1901, for the purpose of "improving the fisheries, cultivation of aquatic products etc." Unlike the fishermen's societies formed under the same law, they were not permitted to engage in actual fishing but were trade associations intended to work for the general improvement of all branches of the fishery industry, using "fishery" in its broadest sense. Although fishermen belonged to these societies proprietors who owned vessels and gear and those engaged in marketing or other phases seemed to have dominated many of the societies. Except for matters provided for in the Fishery Law and Rules, these organizations were regulated by the law of 1900 relating to Associations for Staple Products (Jugo-bussan Dogyo-kumiai).

93/ Some sources refer to these organizations as fishery or aquatic products "guilds."

In addition to the societies of this type dealing with fisheries in home waters an act in 1902 provided for the establishment of suisan-kumiai in foreign waters. There was but one organization under this law -- Aquatic Products Society of Russian Waters (Roryo Suisan-kumiai) which in 1935 was composed of 27 member bodies.

Most sources make no clear distinction between the type of functions or the requisite membership of the suisan-kai and suisan-kumiai. One source refers to the latter as "labor organizations" and states that members appear to be largely drawn from industrial fishermen employed by large companies, but another source refers to them as "trade guilds." The actual range of activities of both types of organizations appears to have been very wide and undoubtedly overlapped. Duplication of activities is suggested by the fact that suisan-kumiai declined as suisan-kai were formed following the law authorizing them in 1921. 94/

Fishermen's Societies (Gyogyo-kumiai). These societies which were the chief organizations of the village fishermen numbered more than 4,000 with a membership of more than 605,000 in 1937. These local societies were coordinated into federations (gyogyo kumiai rengokai) of which there were 89 in 1937 (Table 66).

The fishermen's societies have origins which can be traced back to remote times, but were legally established by the Fishery Law of 1901 for the purpose of acquiring fishery rights for member fishermen. Licenses for "exclusive right" fishing by law could only be granted to

94/ In 1920 there were more than 220 aquatic products societies (suisan-kumiai) but in 1935 only 86 (Table 66).

these societies which in turn delegated privileges to their members. Membership in these societies was voluntary but in the small coastal fishing villages almost all adult persons were members of these societies. Prefectural governments regulated and supervised these societies.

Although the original object was the acquisition of fishing rights, gradually some of these organizations took on other functions concerned with the improvement of economic conditions of the fishermen. By 1920 several hundred organizations growing out of gyogyo-kumiai had taken on cooperative aspects engaging in cooperative marketing, purchasing and credit arrangements.

Cooperatives. 95/ The cooperative movement in Japan has permeated the fishing industry, particularly the coastal fishing carried on in numerous small villages. As indicated above the fishery cooperatives grew out of the gyogyo-kumiai. Some sources consider all gyogyo-kumiai as cooperatives, but others indicate a much smaller number -- 723 in 1936. This latter figure probably comes nearer to the number of true cooperatives (sangyo-kumiai) dealing with fishing activities.

It is frequently stated that the fishery cooperatives began in 1933 with the revision of the Fishery Law. Actually they began earlier but this law, which was favorable to the cooperative activities of village fishermen's societies in marketing, purchasing and credit arrangements, caused the reorganization of many of these societies to include cooperative enterprises.

95/ For information concerning cooperatives in agriculture in which conditions are somewhat similar to those of the fishing industry, see "Civil Affairs Guide -- Agricultural Associations of Japan" (Preliminary), February 1945.

Fishery cooperatives, like other cooperatives, were organized in accordance with the Cooperative Societies Law of 1900 and its numerous amendments. Originally they were organized on a voluntary basis and individuals might belong or not as they chose. Cooperatives related to the fishing industry like those related to other industries were grouped into four kinds, engaged in credit, sales, purchasing and "utility." A single society, however, could and in many cases did carry out one, two, three or all four of the functions. Credit functions were the providing of credit to fishermen; sales functions the cooperative marketing of the products produced by members; purchasing groups bought such articles as fishing implements needed by their members; and "utility" groups allowed members to make use of such facilities as boats and equipment.

Above the local level were cooperative federations organized on district, prefectural or national lines and engaged in the same type of work as the local cooperatives. At the national level was the Central Union of Cooperative Societies (Sangyo-kumiai Chukai) under the supervision of the Ministry of Agriculture and Forestry and also a Central Bank for Cooperative Societies (Sangyo-kumiai Chuo Kinko). 96/

Although the cooperatives related to the fishery industry were sponsored and encouraged by the government, being offshoots of the gyogyo-kumiai and related to cooperative activities in other industries, they appear to have been, at least originally, indigenous and voluntary.

96/ This applies not only to the cooperatives of the fishery industry but to all cooperatives.

Companies

According to Japanese statistics fishery companies in the period 1936 - 1941 numbered more than 300, capitalized at between 182 - 298 million yen (Table 67). There is little information about most of these companies, some of which engaged in deep-sea fishing off Japan proper and in aquiculture. The largest companies were those active in the deep-sea operations of trawling and motor-boat dragging, whaling and fishing in Northern and colonial waters. Most of these latter operations were undertaken on a huge scale under a monopolistic system with investment of large capital. Numerous companies which had previously engaged in these fisheries were merged, with government encouragement, to form super-corporations, the ultimate management of which, in most cases, integrated fishing activities with such diverse interests as ship-building and the manufacture of fertilizer, explosives and soap. The two largest companies, which together dominated the operations in Northern waters, whaling and trawling were the Japan Marine Products Company (Nippon Suisan K. K.) and the Nichiro Fishery Company (Nichiro Gyogyo Kaisha). Another large company operating in 1940 was the Hayashikane and Company. In the distributing of marine products Mitsubishi Shoji Kaisha dominated. Fourteen of the large companies, some of which operated outside Japanese waters, are listed in Appendix D .

As indicated below the largest companies were most strongly interested in the export production. These firms were at least partially controlled by the large Japanese industrial combines. One can distinguish

among others the well-known family firms of Mitsubishi and Mitsui and the Nissan interests (the Manchurian Heavy Industry Development Corporation).

TABLE 67

Japanese Fishing Companies, 1936 - 1941

	<u>Number of Companies</u>	<u>Capital (yen)</u>	<u>Reserves (yen)</u>	<u>Net Profit (yen)</u>
1936	346	182,241,152	16,665,136	15,491,053
1937	353	253,677,652	24,033,043	16,077,870
1938	313	263,093,982	27,901,291	21,173,009
1939	312	259,200,000	29,500,000	24,900,000
1940	331	273,404,454	52,021,674	37,304,332
1941	318	298,194,000	64,223,000	51,542,000

Source: Japan Yearbook, 1943-44.

Japan Marine Products Company (Nippon Suisan K. K.). This company, the largest of all Japanese fishery companies, was created in 1937 under sponsorship of the Imperial Government. It was successor to the much older Kyodo Gyogyo K. K. which had started in the trawling business in 1914, capitalized at 2 million yen. After a series of consolidations with other companies, the Nippon Suisan K. K. in 1939 was operating steam trawlers, floating crab canneries and factory whalers as well as smaller types of vessels.

Its operations in recent years stretched from the Northern waters to the Antarctic whaling grounds with vessels also operating in the Pacific south of Japan, in the Indian Ocean and even off Central America and Argentina. In 1939, when it was capitalized at 92 million yen, with the Manchurian Heavy Industry Development Corporation as its chief shareholder, it claimed 87 percent of the Japanese trawlers, 70 percent of

the motorized drag-netters, 99 percent of the crab pack produced on floating canneries, 40 percent of the whaling with floating factories and 76 percent of the near-sea whaling, 50 percent of the ice output of Japan, 61 percent of the refrigerating capacity and 20 percent of the total Japanese exports of marine products.

At Tobata the company had a modern fishing base with wireless transmitting station for communicating with its scattered fleet. Its main office was in Tokyo, but its 50 branches were scattered throughout Japan, Korea, Formosa and China.

Nichiro Fishery Company (Nichiro Gyogyo K. K.). This company was the other large fishery combine, said to have been controlled by the Mitsubishi interests but also having among its shareholders the Mitsui Bussan. Capitalized at 54 million yen in 1940 this company controlled the operations in Soviet waters, the northern Kuriles and the floating salmon canneries. Three of its main subsidiaries were the Hokkai Canning and Warehousing Company which manufactured cans and handled warehousing, the Pacific Fishery Company which worked floating salmon canneries and the Kuriles Aquatic Company which carried on fishing in the northern Kuriles. Salmon was the mainstay of this company although it also produced crab, cod and other species of the northern area. In 1939 it operated 34 canning plants and 55 refrigerators in this area in addition to several large-scale refrigerators located in Hokkaido, northern Honshu and in Tokyo.

The company had its head office in Tokyo but the operating headquarters for Nichiro and its affiliates was at Hakodate. Outfitting and ship repair were carried on at this Hokkaido port.

Hayashikane and Company (Hayashikane Shoten K. K.) This was a family company which had operated in fisheries for more than 100 years, but was reorganized into a large joint stock company, capitalized at 15 million yen in 1924. In 1939 it and its subsidiary corporations owned 580 fishing boats with a tonnage of 70,000 gross tons and engaged in distribution of marine products and fishing gear and equipment.

The chief subsidiary was the Taikyo Whaling Company which operated in the Antarctic. The head office of Hayashikane was located in Shimono-seki with main branches at Tokyo, Aomori and Nagasaki.

Mitsubishi Trading Company (Mitsubishi Shoji Kaisha) was the dominant firm in the distribution of marine products. In 1938 it handled the marketing of 70 percent of the canned salmon and 65 percent of the canned crab; it was the exclusive distributor of Nichiro salmon and crab and Nippon Suisan crab. In addition, it handled canned tuna, sardine and mackerel, fertilizer and fish oils (including whale oil).

Associations

Fishing, processing and marketing groups, whether companies or societies were coordinated in one or more of various nationwide associations. Many of these associations were government sponsored and through them the government exercised control.

Three of the nationwide associations were the Imperial Fishery Society (Teikoku Suisan-kai), the Fisheries Society of Japan (Dai Nippon

Suisan-kai) and the Central Association of Fisheries Cooperatives. The first was a national association which tied together the numerous local and prefectural fishery societies (suisan-kai). The Dai Nippon Suisan-kai, which originated in 1882, had members drawn from among scholars, statesmen, industrialists and businessmen and published a number of volumes dealing with the industry. The Central Association of Fisheries Cooperative Societies, formed in 1933, coordinated the local fishery cooperatives.

In addition to these, associations of manufacturers and exporters of various marine products were organized into a number of special trade associations. These as of 1939 are listed below. Their functions dealt chiefly with inspection of products for export, control of production, the conducting of surveys on markets, and research on the improvement of processing and export marketing. They were government sponsored and all packers of some products were forced to belong to the association dealing with those products.

- Japanese Salmon Cannery Association
- Japanese Canned Crab Packers and Exporters Association
- Sardine and Pilchard Cannery Association
- Tuna Packers Association of Japan
- Shellfish Packers Association of Japan
- Cod Fish Packers Association of Japan
- Fish Meal Producers and Exporters Association
- Agar-agar Exporters Association of Japan
- Frozen Tuna Association
- Frozen Scallops Producers Association

Other associations of nationwide membership which were concerned with some phase of the fishery industry were:

Canned Food Association of Japan which coordinated the various
canned product associations, many of which are listed above.
Society of Ocean Fisheries Promotion
Fishing Vessel Owners Association
Japanese Association of Refrigeration
Aquatic Products Dealers Association

Trade associations (dogyo-kumiai) which were apparently not
nationwide in scope included:

Tokyo Canned Foods Association
Osaka Canned Foods Association
Dried and Canned Marine Food Exporters Association of Yokohama
The Land and Marine Products Exporters Association of Kobe
Marine Products Association of Nagasaki Prefecture
Marine Products Exporters Association of Kammon
Marine Products Dealers Association of Hakodate
Marine Products Dealers Association of Otaru
Hokkaido Tangle Exporters Association

Some of these inspected marine products packed by producers not affiliated
with the nationwide canned food associations. Most of them engaged in
promotional activities.

Fishery Schools and Training

The outstanding institute for training in fisheries was the
Imperial Institute of Fishery, a government institute near Tokyo.
This institute provided training in all aspects of the industry includ-
ing fishing methods, operation of vessels, fish culture, processing
and the development of marine resources -- a more extensive program than
fishery schools offer in most countries. Many of the graduates of this
institute were engaged in professional fisheries research, in the manage-
ment of the industry or in governmental administration of fisheries.

Other institutes of the higher grade for fishery education and
training were the Hakodate Higher School of Fishery and the Fishery

Section at the Agricultural College of Tokyo Imperial University.

Fisheries teachers colleges were located at Toyama and Nagasaki and fisheries training was also available at 27 institutions of middle school grade. All the marine prefectures emphasized fisheries training for boys from fishing villages.

Fisheries education in Japan was supported to an extent unknown in other countries. The range of subjects offered in the schools was more extensive and the fishery schools and training institutes were equipped with training vessels, experimental stations, fish hatcheries and plants for processing marine products.

VI INTERNATIONAL FISHING CONTROVERSIES AND AGREEMENTS

The fishing controversies of Japan which have been the subject of recent international negotiation are four: the long-term Russo-Japanese controversy, the Japanese-American Bering Sea salmon fishing controversy, the Japanese "boycott" of the international whaling conservation program and the Japanese abrogation of the 1911 Fur-Seal Convention. 97/ All of these will require post-war settlement and some will require the attention of Military Government officials in regulating the Japanese fisheries during the period of occupation.

The Russo-Japanese Fishing Controversy

For many decades the Japanese fishermen have had the continued use of waters along the Russian coasts of the Japan, Okhotsk and Bering Seas and have come to look upon this fishery as their own. 98/ In the late nineteenth century nationals of Japan were actively engaged in fishing in Russian waters and after the Russo-Japanese War Japan pushed the question of defining these fishery rights. The treaty of 1907 established the basis for the Japanese use of the fishery from that time to the present with but minor changes made in later years. This treaty recognized the rights of Japanese to fish along these Russian coasts except in rivers and inlets and provided for the establishment of fishery lots

97/ Japan has also had minor international difficulties involving diplomatic exchanges such as those caused by the operations of boats off the coast of Central America and in the waters off the Philippine Islands where Japanese craft have occasionally been seized on charges of poaching.

98/ The Japanese claim that the fishing in "the northern waters" is a right established over a period of two centuries.

for which the Japanese could bid on an equal footing with Russian subjects whenever they were offered to the general public. 99/ The Japanese were to suffer no discrimination in such matters as taxes, duties or regulations.

The fishery lots were bid for at annual auctions; the Japanese did not like this system which emphasized Russian sovereignty but they accepted it until 1919. Then they virtually seized the fishery lots, collected the lease rents themselves and continued fishing without a formal agreement. In 1924 a makeshift agreement reviving the 1907 order was reached and with the renewal of diplomatic relations in 1925 negotiations began for a new convention to work out the fishery problems. 1/ This was finally completed and signed in 1928. During the entire period from 1907 until 1928 the Japanese worked 80 percent or more of the lots.

The treaty of 1928 modified some of the provisions of 1907. Under the new articles, although auctioning of lots continued to be the general rule, lots could be leased by mutual agreement without public auction. It provided for leases varying from 1 to 5 years, except for lots attached to canneries which had ten year leases. Following this new convention the Soviets undertook a more vigorous exploitation of the fisheries and in the years following up to the present disputes have been numerous. 2/ Japan has consistently tried to maintain and enlarge

99/ The leasee of a lot is entitled to the use of the territorial water and certain area of land for shore establishments.

1/ After the Russian Revolution Japan withheld recognition of the Soviet Government. The Treaty of Peking (1925) re-established diplomatic relations between the two nations.

2/ Many of the disputes centered about changes in the exchange rate of the yen. Bickerings on this point occurred, for example, in 1930-31 and again in 1934-35.

its strong foothold while the Soviet Union has tried to throw off the obnoxious arrangement which grants the use of its fishery resources to another nation.

In 1932 the Hirota-Karakhan agreement allotted more grounds to the Russians and "stabilized" some 280 lots under Japanese control until 1936 without having to go through the auction process. 3/ In 1936 when the 1928 treaty expired negotiations to review the entire problem were to have been undertaken. A new treaty, however, was not concluded and in 1936 and again in 1937 a modus vivendi was reached extending the 1928 treaty and the 1932 agreement.

During 1938 a tense situation developed over the northern fisheries when the fishing vessels of each nation were interfered with in the waters of the other. When the Soviets announced that "the fishery agreement would not be automatically renewed, that cannery lots which expired in 1938 could not be renewed for another year, but that lots exempted in 1932 would again be placed on auction, with the exception of those lots to be held by the Soviets for strategic reasons," the Japanese threatened to send cruisers to protect their fishermen in Kamchatka waters. 4/

A new agreement was finally reached in April 1939. The "stabilized" lots" were again offered for auction, but it was agreed that Japan could

3/ Although the exchange rate problem was discussed, no new settlement was reached on this point.

4/ Leonard, L. Larry, International Regulation of Fisheries, Washington, 1944.

have all of these for which her nationals bid. Twenty-seven of the other lots were withdrawn by the Soviets and lots which had been in operation for three years were leased for a five-year period. The exchange rate was to continue under the 1932 agreement as 32.5 sen per ruble. In all, Japan obtained control in 1939 of 359 fishing lots of which more than 260 of these were stabilized for five years. The Soviets had more than 400 lots in that year.

The status quo was preserved by an annual modus vivendi in the following four years -- 1940 through 1943. In 1944 the five year leases of lots auctioned under the arrangement of 1939 expired and on March 30, 1944 a new agreement was reached which extended Japanese fishing activities until December 31, 1948. This agreement did not contain any new basic features, being really an extension of the expired agreement. It provided, however, for a 30 percent increase in rents of lots over those of 1928 (a 20 percent increase over 1943 rents), raised rates for the operation of canneries, made certain changes in the prohibited areas and abolished certain limitations to which Soviet citizens were subject under the convention of 1928.

Japanese-American Salmon Fishing Controversy

One phase of Japan's intensive prosecution of the world's fisheries was the "invasion" of Alaskan salmon fisheries in 1936 - 1938. 5/ The resulting clash with American interests caused considerable discussion

5/ Japan's attempt to enter the Bristol Bay salmon fishery was part of its general fishery expansion. Canned salmon was largely an export product and the British market, which took the major part of Japanese export of this product, preferred red salmon for which Alaska's Bristol Bay is the world's main source of supply. Japan was largely dependent

vessels appeared in Bristol Bay, allegedly for crab fishing, the suspicions of American fishermen who feared an invasion of the salmon fisheries were aroused. When the United States Government telegraphed the Embassy at Tokyo it was informed that "no license had been issued for salmon fishing in Bering Sea, and Japanese vessels reported to be operating near Alaska are presumably engaged in crab fishing." Nevertheless during the summer it became clear that Japanese vessels did catch salmon and throughout the season feeling ran high in the fishing circles of Alaska. 7/

Throughout the fall fishing interests actively protested the Japanese operations and in November 1937 the State Department fully stated the case in a note to Japan. In March 1938 the State Department announced that the Japanese Government had given assurances that salmon fishing by Japanese in the Bristol Bay area would be curtailed, that the three-year salmon fishing survey would be discontinued and that the Japanese Government would "continue to suspend the issuance" of licenses for salmon fishing in Bristol Bay.

May 1938 brought wild excitement among the Pacific Coast fishermen when Japanese fishing boats appeared in Bristol Bay. 8/ Just prior to the

7/ Several fishing companies and union representatives chartered a plane which took pictures of Japanese vessels in the process of catching salmon. One vessel was reported with "20,000 freshly caught salmon" aboard.

8/ To fully understand and appreciate the American case in this Japanese "invasion" one must realize the importance of salmon to the Pacific Coast area and the long years of development and conservation of this resource by the American Government. Salmon constitutes the single largest economic resource of Alaska. Over a period of years the United States Government has spent large sums to conserve the salmon fisheries and by adherence to a policy of conservation, highly productive fisheries in perfect balance have been achieved. The fishermen of the Northwest who had felt the

salmon season, however, the Japanese boats withdrew.

Whaling Controversy

Recognizing that the unregulated killing of whales might lead to their extermination, several nations under the leadership of Norway and Great Britain, with the aid of the League of Nations, inaugurated measures for the conservation of this fishery resource. From about 1930 on conferences have been held and treaties and agreements signed in which measures have been adopted by a number of nations to restrict whaling in the Antarctic grounds. 9/ The ultimate success of such a conservation program depended upon the cooperation of all nations whose nationals frequent the whaling grounds. Since the Japanese had been plying the Antarctic grounds with increased intensity, it was essential

restraining hand of the government in their operations deeply resented the Japanese fishing which appeared to be without restriction and which would in a comparatively short time, if continued unchecked, nullify the conservation efforts.

9/ The agreements attempted to protect the whale stock without working disproportionate hardships on those nations largely dependent on land stations as against those dependent upon factory ships. Two species (right and grey) were given complete protection by prohibiting their slaughter; one (humpback) was protected by restricting the catch. Absolute closed seasons were established for some areas and flexible closed seasons for other areas. The taking of "calves or suckling whales or female whales which are accompanied by calves or suckling whales" is prohibited. For the blue, fin, humpback or sperm species, a size limit was fixed below which it is prohibited to take or kill them. Factory ships and land stations were required to make complete use of the carcass and to supply their government with detailed information on the type, size and condition of the whale caught and the amount of oil obtained. In order to decrease the size of the catch it was required that remuneration of employees on catcher ships be based on other than the number of whales killed.

that Japan become a member of the conservation program. 10/ Japan, however, remained aloof, preferring freedom from the restraints of international fishery agreements for its nationals whereas all other nations engaged in this fishery agreed to the program. 11/ In fact, Japanese fishermen took the opportunity which nationals of those states which were parties to the convention were restricted, to extend their operations. Although some progress was made in the conservation of whales, the program prior to the outbreak of the war in September 1939 fell short of achieving its aim due, in part, to Japan's failure to cooperate. 12/ This conflict of Japan with the conservation program of other nations for the protection of whales is one of the friction points awaiting post-war settlement. 13/

10/ Japan only became interested in Antarctic whaling in 1934-35, but had become one of the leading whaling countries by 1937 - 1938. By that year Japanese whalers in the Antarctic had increased threefold over 1935-36; Japan had 20 percent of the men engaged in whaling and took about 14 percent of the catch (see page 109-113).

11/ Though Japan sent a delegate to the London Whaling Conference of 1938 he did not sign the protocol nor did the Japanese adhere to the agreements established.

12/ According to Leonard, op. cit., other factors in the failure to achieve complete success were lack of adequate knowledge of the migrations and life history of whales and the refusal of nations to adopt measures which would curtail the profits of their nationals.

13/ During the early war period attempts were made by some of the whaling countries to continue conservation measures but as submarine and raider warfare made whaling expeditions hazardous and as many vessels had been destroyed, operations were greatly curtailed. In 1944 a conference of seven governments which met in London adopted a protocol restricting Antarctic whaling effective immediately upon the cessation of hostilities. Japan, of course, was not a party to this.

The Fur Seal Controversy

In 1911 by a multilateral agreement the United States, Great Britain, Russia and Japan agreed to protect the fur seals of the North Pacific. These animals establish rookeries on the Pribilof Islands of the United States, the Russian-owned Commander Islands and the Japanese-owned Kaihyoto Island (Robben or Seal Island) during the summer months but migrate into more southerly waters to winter grounds. Although there are no breeding grounds in British territory nationals of Canada had long been interested in pelagic sealing.

Under the terms of this convention pelagic sealing was forbidden in the Pacific area north of the 30th parallel including the Bering, Okhotsk and Japan Seas. The regulation of hunting on its islands was left to each government and the hides taken on these islands, or the revenue from them, was shared with the other nations. 14/ The conservation measures established by this convention rehabilitated the stock of fur seals in the North Pacific, as indicated by the Pribilof Island herd, the largest herd, which increased from 123,600 in 1911 to 2,338,312 in 1939. 15/

14/ Both Great Britain and Japan were to receive \$200,000 each and 15 percent of the catch of the United States and of Russia. Japan was to deliver 10 percent of its catch to the United States, Russia and Great Britain and similarly, if any seals frequented the shores of waters under the jurisdiction of Great Britain, 10 percent of those seals were to be delivered to each of the other parties.

15/ The much smaller Japanese and Soviet herds are estimated at about 30,000 and 20,000 respectively. (Japan's Fisheries Industry, 1939 — Special issue of Japan Times and Mail, 1939).

In October 1940 Japan gave notice of its abrogation of the treaty and a year later the treaty was terminated. The Japanese Government claimed that valuable food fish were destroyed by the increased herd, thus detrimental to its fishing industry, and also indicated that Japan should have a larger share in the distribution of the seal catch. Whether the Japanese charges were more than a preliminary war move is not readily ascertainable for detailed scientific investigations to uphold or refute these claims were lacking.

In December 1942 the United States and Canada made an agreement which because of wartime shortages permitted the taking of fur seals on the high seas. With the war's end further international negotiations for fur seal regulation can be expected and Japan, sharing in this resource, should be a party to any convention.

VII WARTIME CONDITIONS OF THE INDUSTRY

The war has brought significant changes to all aspects of the fisheries industry. Since 1940 there have been increasing indications of reduced supply; the fishing companies have been reorganized to assure closer government control; and the distribution and consumption of fish have come under government regulation.

Decline in Supply

The supply of marine products during the war period is known to have decreased considerably, particularly during 1943, 1944 and 1945. Quantitative figures, however, can only be guesses made on the basis of meager information concerning, on the one hand, the reduction of fishing boats, personnel, equipment and gasoline and, on the other hand, reports of consumer shortages. On such a basis it is estimated that in 1943-44 the production was about 2,360,000 metric tons of fish all of which was available for consumption by the population of Japan proper and in 1944-45 1,650,000 metric tons. 16/ In more recent weeks when the Allied fleet was close to the shores of Japan proper and mines were laid in some of the bays, production undoubtedly dropped well below the levels indicated in the figures above.

The decline in production has been due primarily to the developing shortages of boats, manpower, fuel and equipment, but has also been

16/ Civil Affairs Guide -- Japan, Section 7: Agriculture, April 1944. A report "The Food Position of Japan," April 1945 prepared by Office of Strategic Services, gives 2,240,000 tons for the year 1943-44 and 1,750,000 tons for 1944-45. These estimates are based on Japanese statements regarding catch and the assumption that almost all fish is used for food.

related to the government pricing of food fish. Large and medium sized fishing vessels were commandeered by the armed forces; others were requisitioned for use in transporting materials not only in the coastal trade but also between Japan and Manchuria, Korea and Formosa and many of the small boats were transferred to China for use in landing operations. 17/ Military conscription, the removal of large numbers of fishermen for the operation of commercial boats and the shift of fishermen to other more lucrative war industries has resulted in a manpower shortage. Many of the fishing industries are functioning with older men, women and children; since 1942 women have increasingly replaced men in the fishing industry. All boats using Diesel oil or gasoline have been restricted because of fuel shortages; fuel for Diesel-powered fishing vessels began to be rationed in August 1941 whereas small gasoline boats were less severely restricted at this time but later suffered sizable reductions in fuel rations. Shortages of equipment, including nets, have been reported.

Fisheries in the outlying areas -- deep sea, northern waters and trawling -- were particularly curtailed because of these shortages. Production in the Soviet waters, for example, in 1942 was reported to be about half that of the prewar period and in 1943 only one salmon floating

17/ Reports indicate that the number of fishing boats even of the smaller sizes which were taken over by the government was considerable. According to a report of conditions in late 1943 about one-third of the 30 - 60 ton fishing boats had been commandeered for military or transport purposes. (Report from prisoner. Information Bulletin No. 21 (No. 2) of Southwest Pacific Area, July 5, 1944.)

cannery was operating in the Okhotsk Sea where normally eight were active. 18/ The production of coastal fisheries has also declined despite attempts to keep this production as high as possible. Although these fisheries which produce the bulk of the Japanese supply have suffered less, the shortages of boats, manpower and fuel have greatly reduced the total production. Added to this has been dissatisfaction with the prices established by the government and in recent months the fear of destruction by Allied naval and military operations, such as air attacks on fishing boats and mines laid in coastal waters. Aquiculture production has been encouraged by the government throughout the war years, but although no data are available it is unlikely that recent production has increased to any considerable extent because of manpower shortages.

The only data indicating actual supply conditions from the consumer end are a few isolated ones giving shipments and distribution of fish in the city of Tokyo for August 1944 and statements concerning rations. Table 68 indicates that on a particular day Tokyo received 234 tons of fish which were distributed among approximately 857,000 persons. This quantity of fish is less than one-third of the prewar average daily receipts for Tokyo and may possibly represent a larger than usual daily shipment. This isolated case would suggest a lower overall supply figure for Japan than given above, but undoubtedly conditions in Tokyo and other large cities are not typical of the

18/ It is reported that 25 fishing grounds are being operated in Soviet waters in 1945 (in 1939 more than 300).

TABLE 68

Fish Brought into Tokyo on August 26, 1944 and Number of Persons
Receiving Fish Rations

<u>Fish Brought In:</u>	<u>(tons)</u>
Fresh fish	117
Frozen fish	62
Clams	41
Whale meat	9
Processed articles	5
	<u>234</u>

<u>Distribution :</u>	<u>Number of persons receiving ration</u>
Whale meat	30,454
Baked fish cake	62,000
Clams	102,156
Dried herring	35,257
Dried small fish	93,150
Frozen "hokke" and scallops	49,399
Dried cuttlefish	81,258
Bonito	264,766
Flounder	<u>138,629</u>
Total	857,069

Source: I.D.C. Abstract, August 27, 1944.

country as a whole; in other areas, especially those near the sea coast, supplies of fish are thought to be considerably better.

The drastic cut indicated in the fish supply available for domestic consumption from about 3,000,000 metric tons in prewar years to 1,650,000 tons in 1944-45 can be expected to have seriously affected the Japanese diet. The prewar per capita consumption of about 65 pounds can be expected to have been reduced to about 40 pounds. 19/ This loss in protein supply is important even though it has been mitigated to some extent by soybean imports.

Although no data are available concerning the size of Japan's stockpile of fish and other marine products, the quantities of dried, salted, smoked and canned fish stored for emergency use are thought to be sizable for Japan has been accumulating food stockpiles over a period of several years. One estimate places the reserves of smoked and canned fish as between 25 and 50 percent of annual consumption. 20/

Wartime Distribution

Rationing of food in Japan began in 1940 on a local basis when several cities, finding themselves in short supply, attempted regulation. When such local rationing was first applied to marine products is not

19/ Although the total supply is estimated to have been reduced by almost half the per capita consumption for food is estimated as less because during the war there has been diversion of fish normally used for oil and fertilizer to food purposes and waste has undoubtedly been reduced

20/ "The Food Position of Japan," Office of Strategic Services, April 1945.

known, but in the latter half of 1941 there were local shortages and irregular supply of fish which led to various systems designed to achieve fairer distribution. For example, in August 1941 an ordinance was issued for Hyogo Prefecture outlining a plan for the distribution of fish 21/ and in February 1942 rationing of fish was instituted in Tokyo. 22/

Early in 1942 the Food Control Bill, which established the basis of wartime food control in Japan, provided for complete control of rice and other grains and the partial control of other foods, including marine foods. The purpose of this law was to: (1) strengthen the government control of food; (2) readjust the distribution of food; and, (3) to preserve and store food for emergency use. Although the structure for control set up under this law was national in scope and under the general supervision of the Bureau of Food Control of the Ministry of Agriculture and Commerce, the actual operation for marine products was by control associations established by prefectural governments. According to the announcement in February 1942, marine products were to be regulated in accordance with the following general plan: 23/

1. Prefectural governments were to establish control regulations through ~~designated local~~ control organizations which were in turn to give directions to those concerned with the selling and distribution of

21/ Japan Weekly Chronicle, Kobe, August 7, 1941.

22/ Report of returned repatriates.

23/ I.D.C. Abstract, March 1942.

marine products. Without special permission those dealing in marine products were not to be allowed "to produce or import products not designated by the local control organizations and the local government."

2. Prefectural governments were also to designate the kinds of marine products to be handled by shipping organizations of the prefecture.

3. The sale of marine products for business use or consumption must not take place outside the district markets except when special permission was given.

4. When necessary, local governments may issue orders concerning priority, quantity and method of distribution to retailers.

Under the controls established at this time there were more than 120 distribution points for fish shipments throughout Japan but the distribution to consumers was mainly centered on seven consumption regions -- the six large cities -- Tokyo, Osaka, Yokohama, Kyoto, Kobe and Nagoya -- and Southern Kyushu. Elsewhere counties (guns) were designated as consuming districts.

The fragmentary reports from Japan do not state whether all marine products came under this control, but salted and dried fish are mentioned as the most important items under control. It is considered likely that in areas of short supply all marine products were placed under regulations whereas in other areas some marine products were not controlled.

Later eleven "designated consuming cities" for fresh fish and vegetables were named -- Tokyo, Yokohama, Nagoya, Kyoto, Osaka, Kobe, Hiroshima, Kure, Shimonoseki, Northern Kyushu and Sasebo. For distribution

to these designated areas shipping plans on the kinds and monthly quotas were made up by the Central Agricultural Association (Chuo Nogyo Kai), approved by the Ministry of Agriculture and Commerce, and notifications were sent by this central association to the local associations. After August 1944, however, the Ministry of Agriculture and Commerce directly notified local government of their producing and shipping plans and made local government authorities responsible for shipping quantities of fresh fish to the consuming areas "taking into consideration local consumption and raw materials for processing."

Since the rationing control of fish is local rather than nationwide, the per capita allowances may vary considerably from area to area. Within any area the per capita ration is also not a fixed quantity for fish is distributed at irregular intervals depending upon the supply. 24/ For each distribution special ration stamps are probably validated which can be used to obtain only the specific ration in question. The actual method of distribution from retailer to consumer varies; it is reported, for example, that several methods were used in Tokyo. 25/

Table 69 names the agencies for the control of fish distribution in several of the large cities as reported in May and June 1944. The distribution units in the six large cities as of April 1944 are reported in Table 70.

24/ In Tokyo in late 1943 fish was reported to be allocated about every three or four days.

25/ Reports from returned repatriates indicate two different ways of handling the distribution of fish to consumers in Tokyo during the last part of 1943. In one district the fish dealer gave each of his customers a number and by posting the number of those he could provide on a sign in his shop he supplied his customers in turn. In another section of the city, however, "fish day" was announced a day in advance and a long line formed with the policy of "first come, first served."

TABLE 69

Control Agencies for the Distribution of Fish as Reported
in 1944Reported in May 1944:

Osaka: Kyoto-Osaka-Kobe Fish Distribution Company (Shigeta, Chief Economics Department); Sea Products Company (Otsubo, Chief of Police Department); Fish Retailers Association (Sakama, Mayor); Sea Products Enterprise Association (Chief of Commercial Economic Association of Kanto Urban Prefecture); Central Sea Products Enterprise Association; Empire Sea Products Control Company, and Osaka City.

Kyoto: Kyoto-Osaka-Kobe Fish Distribution Company (Tanaka, Chief of Economics Department); Sea Products Company (Miyada, Chief of Police Department); Fish Retailers Association (Sunohara, Mayor); Sea Products Association (Takegami---, Chief of Commercial Economic Association); Empire Sea Products Control Company, and Kyoto City.

Kobe: Kyoto-Osaka-Kobe Fish Distribution Company (Saito, Chief Economics Department); Sea Products Company (Tatsuno, Chief of Police Department); Fresh Fish and Clams Retailers Association (Noda, Mayor); Sea Products Enterprise Association (Kikuchi, Chief of Commercial Economic Association); Empire Sea Products Control Company, and Kobe City.

Reported in June 1944:

<u>Name</u>	<u>Address</u>
Yokohama Fresh, Salt and Dried Fish Corporation (Yokohama Namauo Shio Hoshi Kabushiki Kaisha)	Yokohama City, Kanagawa-ku, Yamauchi-chio 3-chome 1
Central Marine Products Corporation, Kawasaki Fish Market (Chuo Suisan Kabushiki Kaisha, Kawasaki Uo Ichiba)	Kawasaki City, Ikeda-cho 140
Yokohama Marine Products Establishing Association (Yokohama Suisanbutsu Shisetsu Kumiai)	Yokohama City, Kanagawa-ku, Yamauchi-cho, 3-chome 1
Yokohama Fishery Enterprise Association (Yokohama Uosho Gyo Kumiai)	Yokohama City, Kanagawa-ku, Yamauchi-chio, 3-chome 1

TABLE 69 (Continued)

Control Agencies for the Distribution of Fish as Reported in 1944

<u>Name</u>	<u>Address</u>
Kawasaki Fishery Enterprise Association (Kawasaki Uoshogyo Kumiai)	Kawasaki City, Horikawa-cho, 19
Kanagawa Prefecture Marine Products Industry Association (Kanagawa Ken Suisan Gyo Kai)	Yokohama City, Masago-cho 1-chome 2
Central Marine Products Enterprise Association (Chuo Suisangyo Kai)	Tokyo City, Shiba-ku, Kaigan-dori 1-chome 20
Imperial Marine Products Control Corporation (Teikoku Suisan Tosei Kabushiki Kaisha)	Tokyo City, Kyobashi-ku Nada-machi 3 chome 8
Imperial Marine Products Control Corporation (Teikoku Suisan Tosei Kabushiki Kaisha)	Yokohama City, Naka-ku, Minatomachi, 1-chome 1
Imperial Marine Products Control Corporation (Teikoku Suisan Tosei Kabushiki Kaisha)	Kawasaki City, Sunago - 1-chome

Source: I.D.C. Abstracts.

TABLE 70

Status of Rationing of Sea Food in the Large Cities As of April 1944

<u>Tokyo.</u>	The method of distribution is "free registration" according to units of neighborhood associations. Among the 48 branches, 7 are under combined operation and the rest under a combined selling system.
<u>Osaka.</u>	Fish distribution is handled with street associations as units.
<u>Yokohama.</u>	District distribution system is applied, with combined selling and combined handling.
<u>Kyoto.</u>	"Free registration" system with neighborhood units is applied. A change from the individual operation to combined selling system is being considered.
<u>Kobe.</u>	District distribution system is employed. Selling is not combined, but transportation fees are computed under a combined system.
<u>Nagoya.</u>	District distribution system is employed. Combined selling system and individual operation are both practiced.

Source: I.D.C. Abstracts, April 1944.

Note: As the above indicates several systems were in use in the large cities for the distribution of marine foods at this time. According to one source the government food control corporation (Foodstuffs Control Corporation) distributed through neighborhood associations while private control associations operated through regular wholesale and retail outlets. In general, in the large cities the local distribution of rationed foods to the consumer was through neighborhood associations (tonari gumi). Neighborhood associations are the smallest of many bodies and organizations by which life in Japan is regulated. Each neighborhood association is composed of 10 families presided over by a neighborhood group head.

Also indicated above is the fact that much of the selling and transportation of marine foods was done by "combined operations," presumably under close government supervision.

Despite the control of food distribution, illegal operations are widespread, and it is reported that most people who have the means and the opportunity supplement their rations by buying in the black market. Fish enters into the black market in considerable amounts; undoubtedly fishermen have been withholding their catch in sufficient quantities to give or sell to their friends. Underlying the large diversion of marine products is the basic difficulty of policing a large number of small-scale fishermen.

Distribution has been a major problem not only because of control difficulties but also because transportation services have been irregular. The regular fish trains which served the large cities in prewar years were discontinued at least much of the time.

Wartime Price Control

In August 1940 a cabinet ordinance provided for several price controls for perishable food including fish and shellfish. Wholesale and retail prices under this ordinance were fixed by the prefectural governments with the advice of a price fixing committee, the whole system being administered by the Ministry of Agriculture and Commerce. The prices of all fish except the poorer varieties were controlled. When these prices were set they were reduced below the free market price prevailing at the time and only minor revisions have been made up to April 1943. Because the prices of most fish were held down by the government, some of the poorer varieties which were not under control became more abundant in the markets and sold at relatively high prices. One of the complaints

of the fishermen throughout price control has been that the government prices were too low to make fishing operations pay. In the summer of 1944 when the flow of food to the large cities was especially poor an attempt was made to increase food shipments by authorizing the food control agencies to pay prices high enough to cover the transportation costs. 26/ In August 1944 it was reported that official ceiling prices of fish were increased 20 - 27 percent.

Details of fish prices during the war period are lacking except for the two following items:

1. A prisoner of war who formerly worked in a fish market in Tobata reports the retail prices listed in Table 71 as prevailing during the period May 1942 to April 1943 and states that prices paid by the store to wholesale dealers were about 20 percent less than these retail prices.

2. In June 1944 the Ministry of Agriculture and Commerce by which fish prices are controlled announced maximum selling prices for ground dried fish as given in Table 72.

Wartime Reorganization of the Industry

Administrative Reorganization. During the war changes in the administrative organization affecting fisheries were numerous but full details of most changes are lacking. In October and November 1943 parts

26/ "Wartime Distribution of Food in Japan," Office of Strategic Services, March 1945.

TABLE 71

Retail Fish Prices in a Tobata Store, May 1942 - April 1943

<u>Fish</u>	<u>Size of Fish</u> (feet)	<u>Usual Weight</u> (momme)	<u>Price per 100 momme</u> (sen)
saba	1	70 - 80	19
iwashi	$\frac{1}{2}$	15	9
aji	1	70 - 80	27
tai	$1\frac{1}{2}$	500	142
tuna	sold in pieces	-	105
buri	3	2,000	34
sawara	3	1,500	81
hirasu	$2\frac{1}{2}$	1,200	34
akabana	$2\frac{1}{2}$	1,200	67
tachi	2	150	19
fuka	4	7,000 - 8,000	30 - 40
neko	$2\frac{1}{2}$	1,000	20 - 30

Note: Normally the first types would be sold in largest quantities, but as these were only procurable in small amounts, it was necessary to fall back on other varieties some of poorer quality. Fuka and neko, poorer fish for which prices were not fixed at this time, constituted a major part of the business during the period indicated.

TABLE 72

Official Maximum Selling Prices for Ground Dried Fish,
June 1944

<u>Type of Fish</u>	<u>Price for Pro- ducers</u> (per 10 kan)	<u>Prices for Marine Industrial Assns.</u> (per 10 kan)	<u>Prices for Wholesalers</u> (per 10 kan)	<u>Prices for Retailers</u> (per 10 momme)
Ground dried bonito	¥ 139.73	¥ 145.32	¥ 149.68	¥ 1.65
Ground dried sardine (A grade)	68.14	72.22	75.83	0.87
Ground dried sardine	39.23	42.25	43.73	0.52
Rough ground fish powder	41.60	44.51	46.73	0.54

Source: I.D.C. Abstract, June 1944.

1 kan equals 3.75 kilograms.

1 momme equals 3.75 grammes.

of the Ministry of Agriculture and Forestry merged with parts of the Ministry of Commerce and Industry to form a new Ministry of Agriculture and Commerce (Nōshōshō). In this governmental re-shuffle the Fisheries Bureau seems to have been taken over intact by the new ministry.

Several wartime bureaus established under the Ministry of Agriculture and Commerce have had, either simultaneously or successively, some concern with fish production, distribution or pricing. Among these were: Bureau of Food Control (Shokuryo Kauri-kyoku), Commodity Price Bureau (Bukka kyoku), Livelihood Commodity Bureau, Resources Bureau (Shizai kyoku) and Recruitment Bureau (Yoin-kyoku).

Reorganization of Companies and Other Organizations. All phases of the fishing industry were subject to close government control prior to the war but since 1942 several reorganizations have brought still closer control. In late 1942 and early 1943 the deep-sea fishing industry was reorganized so that only one big enterprise operated in these fisheries -- the Imperial Fishing Control Company (Teikoku Suisan Tosei Kaisha). This company, formed with a capital raised by the leading fishery companies, lets out boats and gear to four branch companies, operates cold storage plants and grants necessary credits to the branch companies. The branch companies -- the Northern Pacific Fishing Control Company, the Japan-Soviet Fishing Control Company, the Japanese Pelagic Fishing Company and the Western Pacific Fishing Control Company -- were

formed by the merger and realignment of existing companies. 27/ The new Northern Pacific Fishing Control Company and the Japan-Soviet Fishing Control Company were both largely financed by the Nichiro Fishery Company and the Japanese Pelagic Fishing Control Company was largely financed by Japan Marine Products Company.

Although drag net fishing by small boats, tuna and bonito fishing and coastal fishing did not come under this reorganization, in 1943 it was reported that these were all to be reorganized under "a central fishing federation." Information as to the way in which the various societies and federations related to fishing were reorganized is not available, but it is clear that all their activities were harnessed tightly into the government control. Thus production, distribution and pricing were all government controlled.

27/ The relation of these branch companies to such parent combines as Mitsubishi and Mitsui is not known. For discussion of prewar companies and their relations to large industrial combines see Section V.

APPENDIX A

DETAILS OF CANNED SALMON AND CANNED CRAB PRODUCTION

APPENDIX A

DETAILS OF CANNED SALMON AND CANNED CRAB PRODUCTION

Tables 1 and 2 give the output of Japanese salmon canneries by districts for 1936; the total of these two tables represents the entire Japanese pack of 2,292,893 cases.

Tables 3 and 4 summarize Japanese production of canned salmon and canned crab respectively over a period of years.

TABLE 1

Japanese Canned Salmon Pack in Russian Area,
1936 a/

<u>Region</u>	<u>Approximate Cannery Location</u>	<u>Japanese Output (cases)</u>
<u>Eastern Kamchatka</u>	Olyutorka	9,212
	Tamlat	7,884
	Pankara	21,911
	Uka	14,532
	Ust-Kamchatka	198,842
<u>Western Kamchatka</u>	Ozernaya	40,908
	Yavina	80,749
	Koshegochek	53,655
	Opala	72,075
	Bolsheretzk	145,134
	Utka	59,295
	Pimta	43,276
	Kakhta	107,574
	Vorovskaya	106,908
	Kompakova	45,725
	Krutogorov	29,761
	Oblukovina	14,744
	Icha	15,684
	Sopochinaya	15,287
	Utkoroka	814
	Palana	261
<u>Okhotsk</u>		10,566
		<hr/> 1,094,797

Source: "The Fishing Industry of Japan," Office of Strategic Services report, June 1942.

a/ In addition to the Japanese pack, the Russians packed 595,044 cases from their canneries in this area.

TABLE 2

Japanese Canned Salmon Pack of Japan Proper, Karafuto, the Kuriles
and Floating Canneries, 1936

<u>District</u>	<u>Name</u>	<u>Number of Can- neries Operated</u>	<u>Grand Total (Full Cases)</u>
TOOHOKU	Inai Zenhachi & Co.	1	1,850
	Chiba Kanzume	1	7,526
	Wakai Kanzume	1	22,776
	Wakai Zenzo	1	96
	Daito Shokuhin	1	45,127
	Neichi Kanejiro	1	29,841
	Uhara Genshiro	1	327
	Kubo & Co.	1	2,002
	Yamaji Masaichi	1	1,198
	Maru (S) Suisan	1	4,020
	Sakagami Tatsuzo	1	21,402
	Mikami & Co.	1	8,379
	Shimogoori Kanzo	1	388
	Mori Shin Kanzume	1	697
	Suzuriki Kanzume	1	15,157
	Habuchi	1 *	505
	Maguro Kanzume		
	Sasaki Eiichi	1	1,380
	Takahashi Kanzume	1 *	346
Total Toohoku		18	163,017
HOKKAIDO	Iwasa Tatsuo	1	120
	Izumi Katsuhei	1	870
	Inai Kanzume	1	1,534
	Hakodate Kanzume	1	501
	Hokuch Sangyo	1	2,451
	Hokkaido Gyogyo Kanzume	1	--
	Wakai Zenzo	1	31,954
	Yoshida Toshinori	1	373
	Tanaka Kichiji	1	167
	Daido Suisan	1	58,977
	Takagi Yoshimatsu	1	757
	Hokkai Suisan	(a) 1	232
	Usui Gomei	1	355
	Kushiro Kanzume	1	608
	Yamazaki Kumataro	1	1,198

* New Canneries

TABLE 2 (Continued)

Japanese Canned Salmon Pack of Japan Proper, Karafuto, the
Kuriles and Floating Canneries, 1936

<u>District</u>	<u>Name</u>	<u>Number of Can- neries Operated</u>	<u>Grand Total (Full Cases)</u>
	Yamamoto Kuninosuke	1	768
	Matsuda Kanzume	1	2,056
	Kyokuto Kanzume	1	1,116
	Kitanihon Kanzume	1	129
	Taiheiyo Godo	1 *	1,436
	Hokuyo Kanzume	1 *	816
	Miyagi Gyogyo	1 *	14,878
	Kokko Kanzume	1 *	670
	Neichi Kanejira	1 *	5,480
Total Hokkaido		24	127,446
KARAFUTO	Kato Kanzume	1	2,016
	Karafuto Sangyo	1	137
	Karafuto Kyodo	2	8,573
	Karafuto Gyogyo Kanzume	1	3,895
	Kondb Kanzume	1	1,500
	Akasaka Ichisaburo	1	20
	Karafuto Suisan Kogyo	(b) 1	2,327
	Katagawa & Co.	1 *	578
Total Karafuto		9	19,046
ETROFU	Toho Suisan	1	11,044
	Usui Gomei	1	3,980
	Etrofu Suisan	1	23,839
	Suhara Gyogyo	3	37,502
	Higashi Etrofu Gyogyo	(c) 1	973
Total Etrofu		7	77,338
KITA-CHISHIMA (Kuriles)	Hakama Shinichiro	1	32,360
	Hayashikane & Co.	1	60,212
	Horomushiro Suisan	1	131,747
	Hokkaido Gyogyo Kanzume	1	77,962

* New Canneries

TABLE 2 (Continued)

Japanese Canned Salmon Pack of Japan Proper, Karafuto, the
Kuriles and Floating Canneries, 1936

<u>District</u>	<u>Name</u>	<u>Number of Can- neries Operated</u>	<u>Grand Total (Full Cases)</u>
	Toho Suisan	1	14,579
	Chishima Gyogyo	1	14,711
	Taiheiyo Gyogyo (Kataoka-wan)	1	58,200
	Fujino Kanzume	2	57,321
	Kita-Chishima Godo Gyogyo	1	47,640
	Kita-Chishima Gyogyo Unso	<u>1</u>	<u>34,977</u>
Total Kita- Chishima		11	529,709
FLOATING CANNERIES	Taiheiyo Gyogo	3	281,540
	GRAND TOTAL	72	1,198,096

Source: "The Fishing Industry of Japan," Office of Strategic
Services report, June 1942.

TABLE 3
Japanese Canned Salmon Pack, 1930 - 1940
(Cases of 48 pounds)

	Packed in Japanese Territory					Packed by Floating Canneries					Japanese Interests in Kamchatka ^{c/}					Total Pack of Japanese Interests							
	Pinks		Silvers		Kings	Pinks		Silvers			Reds		Chum		Kings	Pinks		Silvers		Total			
	Reds	Total	Reds	Total		Reds	Total	Reds	Total	Reds	Total	Reds	Total	Reds		Total							
1930	10,743	339,291	125	--	--	13,600	28,345	1,500	--	260	43,705	552,581	542,773	11,658	88,858	576,924	910,509	13,263	88,858	260	1,589,834		
1931	4,055	391,721	--	16	--	33,267	2,130	22,035	4,236	810	22,478	462,005	184,942	1,050	47,910	499,327	578,793	23,085	52,162	5,987	1,159,354		
1932	26,489	150,682	--	--	--	59,296	6,669	3,333	178	604	70,030	414,294	712,069	--	30,332	6,763	1,163,478	869,420	3,333	30,510	7,387	1,410,729	
1933	105,403	497,906	14,370	5,077	--	91,383	51,908	6,296	462	119	150,168	286,915	357,593	22	24,095	2,518	671,043	907,407	20,688	29,634	2,637	1,443,967	
1934	267,748	315,790	9,517	25,999	815	239,876	17,253	8,839	6,350	333	272,651	503,428	837,306	19,054	26,633	2,500	1,368,921	1,011,052	1,170,489	37,410	58,892	3,648	2,281,491
1935	74,733	1,009,942	19,160	49,449	491	138,156	166,558	--	9,669	594	313,977	188,304	679,472	--	41,222	7,862	916,860	1,854,972	19,160	100,340	8,947	2,384,612	
1936	234,090	526,694	9,285	144,543	1,944	223,472	31,651	--	25,124	293	281,540	338,985	638,935	1,314	106,307	9,256	1,094,797	1,197,290	10,599	276,974	11,493	2,292,893	
1937	327,143	557,142	850	80,294	1,241	340,550	14,669	--	12,928	355	363,502	337,271	735,053	--	8	1,300	1,073,632	1,004,964	1,306,864	850	93,230	2,896	2,408,804
1938	363,843	338,689	48	75,587	778	279,532	24,372	--	10,269	397	314,570	440,015	729,530	--	26,698	2,200	1,198,533	1,083,390	1,132,591	48	112,554	3,465	2,312,042
1939	230,184	457,005	57	37,551	129	352,012	20,805	--	5,950	187	378,954	280,299	826,360	20	17,025	625	1,124,329	862,495	1,304,170	77	60,576	941	2,228,209
1940a/	--	--	--	--	--	--	--	--	--	--	302,632	--	--	--	--	--	973,539a/	616,978a/	1,079,546	--	86,557a/	--	1,783,081

Source: Pacific Fishery Yearbook, 1941.

a/ No statistics for 1940 available direct from Japanese sources. The figures shown, which do not indicate the details of pack in various districts, were obtained indirectly but are believed to be fairly accurate. According to consular report dated April 24, 1941, the total figure given here does not include output of Hokkaido and Etorofu. If these are included the 1940 pack was about 1,925,000 cases.

b/ The 1937 and 1939 pack figures given here are slightly different from those in Table 46. (page 131).

c/ The entire Japanese output of Kamchatka is normally packed in recent years by Nichiro Gyogyo K. K.

TABLE 4

Japanese Canned King Crabmeat Pack by Districts, 1930 - 1939
(Cases of 48 Pounds)

	<u>Rishiri</u>	<u>Nemuro and</u>		<u>North</u>	<u>Japan Proper and</u>			<u>Kamchatka,</u>		<u>Total</u>
		<u>Kitami</u>	<u>South</u>	<u>Thsima</u>	<u>Karafuto</u>	<u>Korea</u>	<u>Kushiro</u>	<u>North Sea</u>	<u>Floating</u>	
								<u>Fisheries</u>	<u>Canneries</u>	
1930	--	7,000	24,269	8,800	63,491	1,200	--	73,150	407,542	585,452
1931	--	11,872	27,395	8,503	57,112	2,000	--	64,133	240,207	411,222
1932	--	21,000	20,400	--	27,200	1,000	--	47,353	180,340	297,353
1933	5,647	44,074	49,494	5,614	30,762	725	9,925	24,769	153,696	324,706
1934	8,462	51,533	92,561	8,511	45,328	882	37,485	29,155	171,012	444,929
1935	859	25,511	93,840	19,005	42,982	2,556	35,581	35,857	172,744	428,935
1936	453	13,128	53,162	36,531	19,169	252	25,491	47,089	185,506	380,783
1937	--	12,126	52,670	58,248	28,833	124	24,190	80,119	210,728	467,038
1938	--	31,425	44,597	59,453	42,780	12	15,275	83,179	264,956	551,677
1939	--	29,228	33,351	75,970	62,300	--	--	77,580	214,299	492,728

Source: Pacific Fisherman Yearbook, 1940

APPENDIX B

JAPANESE TRADE STATISTICS FOR FISH AND FISHERY PRODUCTS

APPENDIX B

JAPANESE TRADE STATISTICS FOR FISH AND FISHERY PRODUCTS

These tables from the recent U. S. Tariff Commission report, "Japanese Trade Studies — Special Industry Analysis No. 27 — Marine Products" provide the statistics cited in the section on foreign trade.

TABLE 1

Exports of Marine Products from Japan to All Areas,
in Specified Years, 1928 to 1938 a/

<u>Item</u>	<u>1928</u>	<u>1932</u>	<u>1936</u>	<u>1938</u>
	<u>Quantity (100 kin)</u>			
<u>Formosa:</u>				
Fish, shellfish, molluscs, and other aquatic products	<u>b/</u>	<u>b/</u>	<u>b/</u>	<u>b/</u>
<u>Korea:</u>				
Fish:				
Dried	86,196	118,322	147,399	102,258
Salted	72,686	44,918	132,059	201,347
Other	26,630	39,344	112,586	117,262
Seaweed, including tangles	<u>22,076</u>	<u>15,267</u>	<u>22,560</u>	<u>44,489</u>
Total Korea	207,588	217,851	464,604	465,356
<u>Other countries:</u>				
Fish and shellfish:				
Fresh or frozen <u>c/</u>	66,420	70,233	180,978	280,435
Canned:				
Fish	54,755	319,435	1,220,237	1,523,000
Shellfish	239,836	147,633	204,550	187,619
Dried or boiled and dried	281,106	115,433	273,933	146,233
Salted	76,003	39,867	251,208	278,719
Other marine products:				
Meal, fish	<u>d/</u>	<u>d/</u>	1,124,739	675,050
Seaweed (isinglass, laver, tangles)	466,523	646,590	605,187	432,377
Shells and coral	<u>236</u>	<u>97</u>	<u>129</u>	<u>19,145</u>
Total other countries	1,184,879	1,339,288	3,860,961	3,542,578

Value (1,000 yen)

<u>Formosa:</u>				
Fish, shellfish, molluscs, and other aquatic products	9,292	6,934	8,730	9,305
<u>Korea:</u>				
Fish:				
Dried	1,554	1,528	2,722	2,395
Salted	817	330	1,326	2,102
Other	868	835	1,987	3,294
Seaweed, including tangles	<u>387</u>	<u>351</u>	<u>549</u>	<u>951</u>
Total Korea	3,626	3,044	6,584	8,742

TABLE 1 (Continued)

Exports of Marine Products from Japan to All Areas,
in Specified Years, 1928 to 1938 a/

<u>Item</u>	<u>1928</u>	<u>1932</u>	<u>1936</u>	<u>1938</u>
	<u>Value (1,000 yen)</u>			
<u>Other countries:</u>				
Fish and shellfish:				
Fresh or frozen <u>c/</u>	1,889	1,396	3,776	6,697
Canned:				
Fish	1,536	8,749	41,430	54,514
Shellfish	18,573	10,750	18,326	17,086
Dried or boiled and dried	11,643	3,724	12,040	8,456
Salted	712	386	2,573	3,332
Other marine products:				
Meal, fish	<u>d/</u>	<u>d/</u>	7,434	5,182
Seaweed (isinglass, laver, tangles)	7,262	5,408	9,723	9,630
Shells and coral	<u>218</u>	<u>68</u>	<u>217</u>	<u>1,586</u>
Total other countries	41,833	30,481	95,519	106,483
Grand total	<u>54,751</u>	<u>40,459</u>	<u>110,833</u>	<u>124,530</u>

1 kin equals .6 kilogram or 1.32 pounds.

a/ Does not include fish oils (including whale). Also excluded are canned fish and shellfish exported directly from the Kamchatkan fisheries operated by Japan and not reported in official statistics.

b/ Value only given.

c/ Excludes goldfish and fish livers, which in 1939 were valued at 10,000 yen and 6,047,000 yen, respectively.

d/ Not separately reported.

TABLE 2
Exports of Canned Salmon and Trout from Japan to Principal Markets, in Specified Years, 1928 to 1938 a/

Country of destination	1928		1932		1936		1938	
	100 kin	1,000 yen	100 kin	1,000 yen	100 kin	1,000 yen	100 kin	1,000 yen
Belgium	2,996	70	26,351	506	38,399	927	36,758	909
France	4,459	114	92,798	1,759	54,114	1,653	45,584	1,544
Netherlands	621	18	5,569	107	21,685	590	24,482	643
United Kingdom	20,509	571	54,522	2,109	353,535	21,853	578,417	30,409
Manchuria	b/	b/	96	1	875	16	14,911	333
Australia	1,351	38	553	24	11,794	476	31,846	1,656
Other countries	11,052	287	28,883	533	54,685	1,423	123,116	2,968
Total	40,988	1,098	208,672	5,039	535,087	26,938	855,114	38,462

1 kin equals .6 kilogram or 1.32 pounds

a/ Does not include exports of the Japanese fishery operating in Kamchatka.
b/ Not available.

TABLE 3

Exports of Canned Crab from Japan to Principal Markets, in
Specified Years, 1928 to 1938 a/

Country of Destination	1928		1932		1936		1938	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	100 kin	1,000 yen	100 kin	1,000 yen	100 kin	1,000 yen	100 kin	1,000 yen
United States	134,641	10,488	60,758	4,534	82,217	8,391	68,918	7,515
France	4,629	340	19,772	1,369	6,740	778	1,351	127
United Kingdom	76,811	5,977	49,628	3,653	57,421	5,740	46,350	4,786
Manchuria	b/	b/	7	c/	226	14	356	26
Other countries	23,755	1,768	17,468	1,194	24,778	2,277	27,559	2,790
Total	239,836	18,573	147,633	10,750	171,382	17,200	144,514	15,244

1 kin equals .6 kilogram or 1.32 pounds.

a/ Does not include exports of the Japanese fishery operating in Kamchatka which would bring exports considerably higher than shown here.

b/ Not separately reported.

c/ Less than 500 yen.

TABLE 4

Exports of Canned Sardines from Japan to Principal Markets,
1936 and 1938 a/

<u>Country of Destination</u>	<u>1936</u>		<u>1938</u>	
	<u>Quantity</u>	<u>Value</u>	<u>Quantity</u>	<u>Value</u>
	<u>100 kin</u>	<u>1,000 yen</u>	<u>100 kin</u>	<u>1,000 yen</u>
Europe:				
Belgium	17,454	270	15,081	267
Germany	--	--	301	7
Greece	--	--	848	28
United Kingdom	17,055	262	17,880	329
Africa:				
Egypt	2,359	50	4,716	95
Asia:				
British India	74,399	1,107	1,452	24
Burma	--	--	38,358	531
China	586	10	13,261	302
Kwantung	3,568	56	13,133	276
Manchuria	1,333	19	7,798	166
Netherlands Indies	98,406	1,417	94,011	1,541
Philippine Islands	110,022	1,586	74,462	1,290
Straits Settlements	68,625	990	16,392	292
Other countries <u>b/</u>	<u>105,504</u>	<u>1,715</u>	<u>127,339</u>	<u>2,396</u>
Total	499,311	7,482	425,032	7,544

1 kin equals .6 kilogram or 1.32 pounds.

a/ Includes sardines packed in oil and in tomato sauce and in other sauces and oils.

b/ Includes some countries in the above continent groups.

TABLE 5

Exports of Canned Tuna Fish from Japan to Principal Markets, 1934, 1936 and 1938

Country of destination	1934		1936		1938	
	Quantity 100 kin	Value 1,000 yen	Quantity 100 kin	Value 1,000 yen	Quantity 100 kin	Value 1,000 yen
Canada	2,124	112	9,953	521	10,652	492
United States	55,063	3,152	51,838	3,206	43,226	2,807
Belgium	2,191	138	4,291	249	2,922	134
Manchuria	16	a/	143	3	1,420	29
Other countries	10,130	446	15,190	674	16,727	605
Total	69,524	3,848	81,415	4,653	74,947	4,067

a/ Less than 500 yen.

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TABLE 6

Exports of Salted Fish from Japan to Principal Markets in Specified Years, 1928 to 1938

Country of destination	1928		1932		1936		1938	
	Quantity 100 kin	Value 1,000 yen	Quantity 100 kin	Value 1,000 yen	Quantity 100 kin	Value 1,000 yen	Quantity 100 kin	Value 1,000 yen
United States (in- cludes Hawaii)	2,527	66	6,508	80	7,773	119	3,853	76
China	a/ 27,926	a/ 232	10,859	99	160,143	14 57	82,492	1,030
Hong Kong	26,250	210	51	b/	12,011	116	5	b/
Kwantung	18,624	137	20,549	182	63,629	713	168,519	1,936
Manchuria	c/	c/	1,080	8	1,634	18	22,573	225
Other countries	676	17	820	17	6,018	150	1,277	65
Total	76,003	712	39,867	386	251,208	2,573	278,719	3,332

a/ Includes Manchuria.

b/ Less than 500 yen.

c/ Included with China.

1 kin equals .6 kilogram or 1.32 pounds.

TABLE 7

Exports of Fish and Shellfish, Dried, or Boiled and Dried, from Japan to
Principal Markets in Specified Years, 1928 to 1938

Country of destination	1928		1932		1936		1938	
	Quantity 100 kin	Value 1,000 yen	Quantity 100 kin	Value 1,000 yen	Quantity 100 kin	Value 1,000 yen	Quantity 100 kin	Value 1,000 yen
United States a/	23,268	1,135	18,950	584	13,576	484	11,302	683
China	b/ 32,821	2,346	22,892	763	61,540	2,709	43,663	1,985
Hong Kong	163,495	5,083	17,530	546	61,978	2,257	3,622	130
Kwantung	9,965	981	23,406	879	37,208	2,198	56,949	4,260
Manchuria	c/	c/	352	10	3,510	129	9,475	404
Netherlands Indies	113	12	452	32	488	52	164	11
Philippine Islands	5,694	171	8,802	113	26,619	480	8,902	246
Straits Settlements	23,203	788	4,901	174	45,106	2,385	597	39
Thailand	1,005	43	5,061	134	2,727	154	173	14
Other countries	21,542	1,084	13,087	489	21,181	1,192	11,386	684
Total	281,106	11,643	115,433	3,724	273,933	12,040	146,233	8,456

1 kin equals .6 kilogram or 1.32 pounds.

a/ Principally Hawaii.

b/ Includes Manchuria.

c/ Included with China.

TABLE 8

Exports of Fish Meal from Japan to Principal
Markets, 1936 and 1938

<u>Country of destination</u>	1936		1938	
	<u>Quantity</u>	<u>Value</u>	<u>Quantity</u>	<u>Value</u>
	<u>100 kin</u>	<u>1,000 yen</u>	<u>100 kin</u>	<u>1,000 yen</u>
United States	779,694	5,027	332,415	2,590
Germany	280,347	1,975	172,589	1,246
Netherlands	10,964	86	38,395	330
United Kingdom	--	--	13,882	132
Other countries	<u>53,734</u>	<u>346</u>	<u>117,769</u>	<u>884</u>
Total	1,124,739	7,434	675,050	5,182

1 kin equals .6 kilogram or 1.32 pounds.

TABLE 9

Exports of Seaweeds from Japan to Principal Markets in Specified Years, 1928 to 1938

Item and country	1928		1932		1936		1938	
	Quantity 100 kin	Value 1,000 yen	Quantity 100 kin	Value 1,000 yen	Quantity 100 kin	Value 1,000 yen	Quantity 100 kin	Value 1,000 yen
<u>Isinglass, vegetable</u>								
<u>(agar-agar):</u>								
United States	2,959	603	3,309	537	4,928	998	4,465	1,152
France	3,935	754	2,883	421	4,093	739	3,325	601
Germany	2,984	537	3,517	579	2,571	542	4,483	1,201
United Kingdom	1,340	257	1,849	315	4,057	768	2,213	574
China	1,601	306	1,017	93	861	136	780	183
Manchuria	59	12	206	1	126	24	1,051	196
Netherlands Indies	2,764	569	3,623	448	2,501	441	1,221	285
Other countries	5,855	1,104	4,970	771	10,349	1,926	7,817	2,009
Total	21,497	4,142	21,374	3,165	29,486	5,574	25,355	6,201
<u>Laver:</u>								
United States	387	156	525	106	636	151	522	149
China	a/ 432	a/ 40	186	13	677	47	1,732	181
Kwantung	290	68	587	87	1,354	184	3,367	333
Manchuria	b/	b/	9	1	450	51	1,303	88
Other countries	250	38	143	23	509	66	226	40
Total	1,359	302	1,450	230	3,626	499	7,150	791
<u>Tangles and sliced tangles:</u>								
China	306,739	1,912	477,584	1,424	162,412	2,883	121,471	775
Kwantung	114,769	701	104,246	399	74,542	471	241,872	1,488
Manchuria	8,860	52	36,165	109	22,170	133	33,070	255
Other countries	13,299	153	5,771	81	312,951	163	3,459	120
Total	443,667	2,818	623,766	2,013	572,075	3,650	399,872	2,638
Grand Total	446,523	7,262	646,590	5,408	605,187	9,723	432,377	9,630

1 kin equals .6 kilogram or 1.32 pounds.

a/ Includes Manchuria.

b/ Included with China.

TABLE 10

Exports of Fresh Fish and Shellfish from Japan to Principal Markets,
By Types in Specified Years, 1928 to 1938 a/

<u>Year and item</u>	<u>United States</u> <u>b/</u>	<u>China</u> <u>c/</u>	<u>Kwantung</u>	<u>Other countries</u>	<u>Total</u>
<u>Quantity (100 kin)</u>					
1928:					
Fish and shellfish	34,977	18,939	10,764	1,740	66,420
1932:					
Fish and shellfish	31,566	8,426	25,335	4,906	70,233
1936:					
Bonito and tuna	21,198	95	7,207	5	28,505
Oysters	31,599	125	48	155	31,927
Other fish and shellfish	<u>75,293</u>	<u>6,486</u>	<u>37,154</u>	<u>1,613</u>	<u>120,546</u>
Total	128,090	6,706	44,409	1,773	180,978
1938:					
Bonito and tuna	35,716	7,755	4,787	593	48,851
Oysters	2,020	130	16	--	2,166
Scallops (hotatekai)	4,636	581	5	313	5,535
Other fish and shellfish	<u>57,567</u>	<u>97,955</u>	<u>66,564</u>	<u>1,797</u>	<u>223,883</u>
Total	99,939	106,421	71,372	2,703	280,435
<u>Value (1,000 yen)</u>					
1928:					
Fish and shellfish	1,094	475	279	41	1,889
1932:					
Fish and shellfish	683	199	357	157	1,396
1936:					
Bonito and tuna	387	2	227	<u>d/</u>	616
Oysters	324	1	<u>d/</u>	<u>1</u>	326
Other fish and shellfish	<u>2,081</u>	<u>86</u>	<u>609</u>	<u>58</u>	<u>2,834</u>
Total	2,792	89	836	59	3,776
1938:					
Bonito and tuna	696	185	131	21	1,033
Oysters	24	1	<u>d/</u>	--	25
Scallops (hotatekai)	223	20	<u>d/</u>	10	253
Other fish and shellfish	<u>2,034</u>	<u>2,172</u>	<u>1,082</u>	<u>98</u>	<u>5,386</u>
Total	2,977	2,378	1,213	129	6,697

1 kin equals .6 kilogram or 1.32 pounds.

a/ Does not include fish livers which were not separately reported prior to 1939. During that year the exports of fish livers were 4,167,000 kin valued at 6,047,000 yen almost all going to the United States.

b/ Includes negligible exports to Hawaii.

c/ Includes insignificant exports to Manchuria.

d/ Less than 500 yen.

TABLE 11

Imports of Marine Products into Japan from All Areas in Specified
Years, 1928 to 1938 a/

<u>Item</u>	<u>1928</u>	<u>1932</u>	<u>1936</u>	<u>1938</u>
	<u>Quantity (100 kin)</u>			
Formosa <u>b/</u>	77,920	87,197	<u>c/</u>	<u>c/</u>
Korea <u>d/</u>	1,796,759	2,183,766	2,835,417	6,233,756
Other countries:				
Fish salted	343,200	1,048,186	136,269	126,121
Other fish and shellfish	<u>e/</u>	<u>e/</u>	<u>e/</u>	<u>e/</u>
Inedible products <u>f/</u>	219,568	368,610	247,372	63,935
	<u>Value (1,000 yen)</u>			
Formosa <u>b/</u>	3,599	1,965	3,391	2,391
Korea <u>d/</u>	23,614	17,986	28,850	46,400
Other countries:				
Fish salted	3,242	9,831	1,449	1,174
Other fish and shellfish	1,747	7,498	1,411	468
Inedible products <u>f/</u>	<u>3,665</u>	<u>3,169</u>	<u>4,729</u>	<u>1,687</u>
Total	35,867	40,449	39,830	52,120

1 kin equals .6 kilograms or 1.32 pounds.

a/ Does not include fish oils (including whale) which are covered in a trade study entitled Fats, Oils and Oil-Bearing Materials.

b/ Includes fish, shellfish, molluscs and all aquatic products except salt, corals, and shells.

c/ Not available.

d/ See Table 12.

e/ Value only given.

f/ Includes shells, sponges and fish guano.

TABLE 12

Imports into Japan from Korea of Marine Products in Specified Years, 1928 to 1940 a/

Item	1928	1932	1934	1935	1936	1938	1940
	<u>Quantity (100 kin)</u>						
Fish:							
Fresh or frozen	668,148	947,931	811,771	805,129	566,796	840,475	543,690
Canned b/	14,366	22,064	43,480	59,039	43,556	31,302	49,487
Dried	152,583	201,394	195,329	162,899	96,036	159,835	223,689
Salted	96,134	52,767	87,132	85,860	64,657	54,262	148,717
Roe	17,990	34,257	45,912	43,550	39,077	47,947	78,596
Shellfish:							
Fresh or frozen	10,922	8,093	23,534	38,736	24,450	12,194	15,814
Dried:							
Shrimp and prawn	21,421	10,069	18,950	27,360	34,388	35,038	29,333
Other dried shellfish	11,037	6,664	14,758	15,887	8,951	1,579	5,046
Whale meat	67,022	27,928	19,036	28,227	17,123	29,617	15,455
Seaweed:							
Isinglass, vegetable	160	266	153	267	371	413	220
Porphyra	8,842	10,593	14,578	10,663	28,294	27,305	31,479
Other seaweed	42,403	38,113	35,667	46,431	42,263	35,554	34,605
Byproducts:							
Fish:							
Dried for fertilizer	7,146	15,481	6,096	6,341	8,001	10,998	22,814
Meal	c/	c/	77,364	261,914	216,567	911,100	929,304
Refuse	678,585	808,146	854,136	1,505,268	1,644,787	4,036,137	1,443,146
Total	1,796,759	2,183,766	2,247,896	3,097,571	2,835,417	6,233,756	3,571,395
	<u>Value (1,000 yen)</u>						
Fish:							
Fresh or frozen	6,273	4,650	5,317	5,202	4,174	6,818	7,945
Canned	510	468	1,011	1,572	1,071	866	2,102
Dried	4,895	4,337	5,543	4,454	3,441	5,159	11,147
Salted	910	462	842	712	669	687	2,876
Roe	527	830	1,101	1,108	1,064	1,575	3,269

TABLE 12 (Continued)

Imports into Japan from Korea of Marine Products in Specified Years, 1928 to 1940 a/

Item	1928	1932	1934	1935	1936	1938	1940
	Value (1,000 yen)						
Shellfish:							
Fresh or frozen	135	116	246	400	302	193	493
Dried:							
Shrimp and prawn	513	179	319	470	702	938	1,439
Other dried shellfish	488	164	408	624	348	68	409
Whale meat	628	175	138	288	153	303	255
Seaweed:							
Isinglass, vegetable	30	40	22	36	71	92	119
Porphyra	2,586	2,086	3,539	2,121	3,969	6,558	16,057
Other seaweed	1,500	912	1,035	1,603	1,745	1,408	2,775
Byproducts:							
Fish:							
Dried for fertilizer	46	66	26	35	43	63	398
Meal	c/	c/	328	1,583	1,402	6,845	16,148
Refuse	4,573	3,501	4,099	7,620	9,696	14,821	22,262
Total	23,614	17,986	24,074	27,828	28,850	46,400	87,694

1 kin equals .6 kilogram or 1.32 pounds.

a/ Does not include fish oils (including whale).

b/ Reported in dozens of cans. Converted to 100 kin on an estimated basis of 1 pound per can and 132.277 pounds per kin.

c/ Not separately classified prior to 1933.

TABLE 13

Japanese Trade in Marine Oils, 1937 and 1938 (1,000 pounds)

	<u>Imports a/</u>	
	<u>1937</u>	<u>1938</u>
Fish oil	75,194	87,311
Whale oil	<u>422</u>	<u>481</u>
Total <u>b/</u>	75,616	87,792

	<u>Exports c/</u>	
	<u>1937</u>	<u>1938</u>
Cod oil	8,341	2,819
Sharks liver oil	11,756	11,068
Sardine oil	82,808	35,554
Other fish oil	13,123	7,353
Whale oil	5,099	227
Hardened fish oil	<u>67,987</u>	<u>43,728</u>
Total	189,114	100,749

Source: "Japanese Trade Studies --- Special Industry Analysis No. 15 -- Fats, Oils and Oil Bearing Materials," U. S. Tariff Commission, May 1945.

a/ All imports were from Korea; imports from other areas were small and not listed separately.

b/ In addition hardened fish oil was imported largely from Korea. Total hardened oil imported was 43,196 pounds in 1937 and 32,602 pounds in 1938. Total imports of marine oils were probably 100,000 - 120,000 pounds.

c/ Exports were chiefly to European countries.

APPENDIX C

LAWS AND REGULATIONS RELATING TO FISHERIES

APPENDIX C

LAWS AND REGULATIONS RELATING TO FISHERIES

The basic law dealing with fisheries is the Fishery Law of 1901, the text of which is given below.

Fishery Law of 1901

Section 1. In this law the word "fishery" means the catching or cultivation for profit of aquatic fauna and flora.

The word "fisherman" means one who engages in or possesses the privilege of fishery.

Section 2. This law does not apply to private waters except where expressly so provided.

Section 3. Any person desirous of obtaining the right to fish (a) either by establishing any fixed gear in a fixed position, (b) or by enclosing a particular area of water should obtain a Government license; the Minister of the Department shall determine the kinds of fishery requiring special licenses.

Section 4. A Government license must also be obtained for the exclusive right of fishing within a given area. Such license shall only be granted on the application of a fishermen's society (gyogyo-kumiai) intending to use for such exclusive right the shore of the locality where such society is established, or in cases where such right has acquired the sanction of long usage.

Section 5. The license mentioned in Section 4 shall determine the limits of the fishery when granted to a society or shall recite such limits when granted in accordance with long usage.

Section 6. Licenses shall not exceed 20 years duration, but periods of suspension under Section 9 shall be excluded in determining the expiring of the license.

Section 7. Rights of fishery may be the subject of inheritance, assignment, common property, or mortgage, but the transfer of exclusive use of an area of the sea can only be sanctioned by the authorities.

Section 8. The right of fishery may be cancelled when such right is not exercised within one year of the issue of license, or except on special

sanction, where a fishery has not been carried on for two whole years. But suspensions under Section 9 shall not be taken into count in the above periods.

Section 9. The authorities may limit, suspend, or cancel any fishery license when required for the protection of aquatic products or by the public interests, or when a fisherman breaks this law or the regulations issued thereon.

Section 10. Owners of land shall not hinder entry on their land or the use thereof when so required for establishing marks for fixing the boundaries or bearings of fishing grounds, provided that the sanctions of the authorities shall have been duly obtained.

Section 11. The authorities may order the establishment of such fishing marks.

Section 12. Any loss or damage caused by the entry or use of private land as mentioned in Section 10 shall be paid for upon a claim being made.

Section 13. With the sanction of the Minister of the Department prefectures may issue orders on the following matters:

- (1) The limitation or prohibition of catching and selling marine products;
- (2) The limitation or prohibition of particular methods of catching or using boats or implements;
- (3) Limitation of the number of fishermen engaged in a fishery, or fixing their qualifications;
- (4) Limitation or prohibition of the discharge into the water of substances injurious to aquatic products.

Where such orders are violated all fishing implements and the products fished shall be liable to confiscation.

Section 14. The Minister may limit or prohibit the placing or building in any particular locality of any construction that may interfere with a passage of fish up a river.

He may also order the modification of any such existing construction.

Section 15. In cases falling under the second paragraph of Section 14 compensation shall be payable by the Minister, such compensation being recoverable from any fisherman upon whose application the modification was ordered.

Section 16. The three preceding sections shall be applicable to private waters when such water communicate with public waters.

Section 17. Not translated.

Section 18. The fishermen residing within definite limits may, with the sanction of the authorities, form a fishermen's society (gyogyo-kumiai): the territorial limits of the society shall be definite sections or hamlets of a town, village or fishermen's quarters. In Hokkaido the limits may extend to those of a county.

Section 19. Such fishermen's society shall be the owners of the fishery rights and privileges in the given locality, but shall not itself (that is quâ society) conduct fishing operations.

Section 20. When such society has obtained a license for the exclusive use of the sea adjoining its place of habitation, it shall cause its individual members to conduct the fishery on rules laid down by the society.

Section 21. The Minister of the Department shall issue regulations for the establishment, management, and supervision of fishermen's societies.

Section 22. Fishermen or persons engaged in the manufacture or sale of fishery products may establish an aquatic products society (suisan-kumiai) or fishery guild for the improvement and development of fisheries, for the protection and cultivation of marine products or for increasing the advantages derived from the industry. Such societies shall be regulated by the Law for Industrial Associations (Juyo-bussan-dogyo-kumiai).

Section 23. Anyone to whom the issue or modification of a fishery license has been refused or who may consider himself aggrieved by any decision under Sections 8 or 9 or paragraph 2 of Section 14 may present an objection petition to the authorities.

Any persons aggrieved by the decision on such objection petition may appeal to the Civil Courts.

Section 24. Any person considering himself injured by the wrongful issue of a license or by a wrongful modification thereof may file suit in the Civil Courts.

Section 25. In case of disputes between fishermen as to the boundaries of fishing grounds or the limits of any fishing rights or methods, the parties may apply to the local authorities for the decision of such dispute. Either party may sue in the Civil Courts against such decision.

Section 26. Any person fishing without a license in cases where license is required or during any period of suspension of such license or in

contravention of the conditions or limits settled by such license, shall be liable to fine, and to the confiscation of all fishing gear employed in such illicit fishing and of the products thereof.

Section 27. The owner or possessor of the right of fishery shall be held responsible for the acts of his employees, and penalties due under Section 26 shall be levied upon him.

Section 28. Any person trespassing upon rights of fishery conferred by Sections 3 and 4 shall be liable to fine upon the complaint of the owner or possessor of the rights trespassed upon.

Section 29. Anyone destroying or removing marks denoting a fishing ground shall be liable to fine.

The above law was supplemented by 75 sections of regulations issued by the Government for the due carrying out of the law.

Major Laws and Ordinances

Listed below in chronological order are important laws and ordinances dealing with the fisheries. The provisions of some of these have been mentioned in the report.

- | | |
|------|--|
| 1897 | Pelagic Fishing Encouragement Act. This act provided bounties to those engaged in pelagic fishing under specified conditions and provided for the training of officers and fishermen for pelagic fishing. Amended in 1905. |
| 1901 | Fishery Law as given above. Amended in 1910 and 1933. |
| 1905 | Amendment to Pelagic Fishing Encouragement Act extended the bounties to persons engaged in handling or transporting marine catches and to proprietors of vessels with certain types of motors and equipment. |
| 1910 | Amendment of Fishery Law. Provisions not available. |
| 1921 | Ministerial Ordinance No. 31 required that permission be obtained from prefectures for trawling operations. |

- 1921 Suisan-kai Law providing for the establishment of fishery societies (suisan-kai).
- 1922 Central Wholesale Marketing Law.
- 1923 Ordinance providing for the control and limit of floating crab canneries.
- 1924 Trawl fishing placed under special control.
- 1929 Ordinance providing for the control of floating salmon canneries.
- 1933 Revision of the Fishery Law of 1901 which extended the scope of the village fishermen's societies and their cooperatives. Cooperatives were permitted to handle sales and make purchases for their members as well as to undertake banking functions. Fishermen's societies were granted exemptions from certain taxes and were protected against competition from trawlers and large seines operated by corporations and wealthy individuals.
- 1934 Trawler Control Law limited the number of trawlers permitted to operate in Japanese waters.
- 1934 Export Fisheries Control Law provided for regulation of exports of marine products.
- 1936 Fish Meal Export Control Law.
- 1937 Fishing Boat Insurance Act.
- 1939 New licensing system established for canneries.
- 1940 Ordinance further centralized the control of canned products by requiring all sales through special sales organizations.

APPENDIX D

LARGE JAPANESE FISHERY COMPANIES AS OF 1940 OR 1941

APPENDIX D

LARGE JAPANESE FISHERY COMPANIES AS OF 1940 OR 1941 (Capital in 1,000 yen)

- Borneo Suisan K. K. - Saiwai Bldg., Uchisaiwai-cho, Kojimachi-ku, Tokyo.
Est. Dec. 1933. Cap. 2,500 (1,400 p.u.) Rep.-Dir. K. Ueki.
Branches: Tawao, Borneo, Bonito Fishing in Sulu and Celebes Seas
of British North Borneo.
- Daito Gyogyo K. K. - 358 Hon-machi, Kochi City, Kochi-ken. Est. 1907.
Cap. 800. Rep.-Dir. K. Nakagawa.
- Fusan Suisan K. K. - 76 Ohashi-dori 3-chome, Fusan, Korea. Est. 1907.
Cap. 2,000 (1,010 p.u.). Pres. G. Kashi: Mng. Dir. G. Zetaya.
Engaged in aquatic industry.
- Godo Gyogyo K. K. - Otaru City, Hokkaido. Est. 1931. Cap. 9,686 (p.u.).
Pres. Y. Mitsui. Herring fish in Hokkaido waters.
- Hayashikane Shoten K. K. - 61, Takezaki-cho, Shimonoseki City. Est. 1924.
Cap. 15,000. Pres. I. Nakabe: Sr. Mng. Dir. K. Nakabe: Jr. Mng. Dirs.
Kenkichi Nakabe, E. Nakabe: Dirs. K. Ariyoshi, Y. Nakabe, etc.
Headquarters, Shimonoseki. Branches: Tokyo and 45 other places.
- Hinode Gyogyo K. K. - Gyogyo-Umetatchi, Shimonoseki City, Est. 1934.
Cap. 1,000 (640 p.u.). Pres. R. Masui: Mng. Dir. I. Ishimaru.
Fishing by trawlers in Yellow Sea and China, Formosa, Kyushu, Korean
waters.
- Karafuto Kyodo Gyogyo K. K. - 7 Sakae-machi Hondori 2-chome, Odomari-machi,
Karafuto. Est. 1932. Cap. 5,260 (p.u.) Rep.-Dir. T. Hiratsuka.
- Kyokuyo Hogeï K. K. - Marunouchi Bldg. Marunouchi, Tokyo. Est. 1937.
Cap. 20,000 (15,000 p.u.). Pres. T. Yamaji; Mng. Dirs. Y. Ota,
J. Ishizeki. Whaling and Marine Transportation.
- Nishiman Gyogyo (Fishery Co.), Ltd. - 1 Tokiwamachi, Dairen. Est. 1934.
Cap. 1,000 (p.u.). Rep.-Dir. S. Minoda: Jr. Mng. Dir. S. Egima.

Nichiro Gyogyo K. K. (Nichiro or Russo-Japanese Fishery Co., Ltd.) -
2 Marunouchi 2-chome, Kojimachi-ku, Tokyo. Est. 1914. Cap. 53,800
(42,300 p.u.). Pres. T. Hiratsuka; Vice Pres. S. Shindo; Sr. Mng.
Dir. H. Miyake; Jr. Mng. Dirs. G. Toyama, S. Tsutsumi, M. Omi.
Branch: Hakodate. Merged Hokuyo Godo Fishery Co., in 1932.

Nippon Suisan (Marine Products) Co., Ltd. - Nissan Bldg., 2 Tamura-cho
1-chome, Tokyo. Est. 1925. Cap. 93,000 (68,250 p.u.). Pres.
K. Tamura; Mng. Dirs. K. Ueki, S. Minoda, J. Kato, Y. Nishimura,
C. Iwamoto. Trawling, Deep-sea fishing, whaling, ice manufacture,
cold-storage and freezing enterprises; sales of such products and
other foods, etc. Merger of Kyodo Fishery Co., Nippon Godo Kosen
Co., Nippon Whaling Co., Nippon Shokuryo Kogyo K. K.

Osaka Uo K. K. (Osaka Fish Co., Ltd.) - Shimo-Fukushima 3-chome,
Komohana-ku, Osaka. Est. 1931. Cap. 17,000 (12,763 p.u.). Pres.
T. Inoue; Vice Pres. K. Toyoda; Jr. Mng. Dir. H. Sawa. Fish Markets.

Taiheiyo Gyogyo K. K. - Head Office: Marunouchi Bldg., Marunouchi,
Tokyo. Branch Hakodate. Est. 1931. Cap. 8,000 (p.u.). Pres.
T. Hiratsuka; Sr. Mng. Dirs. S. Shindo, T. Hara; Jr. Mng. Dirs. T. Koshida,
K. Yamada. Salmon and trout fishing in Kamchatka and Hokkaido Waters.

Takasago Gyogyo K. K. - 5, Kannonzaki-machi 5-chome, Shimonoseki City.
Est. 1932. Cap. 750 (p.u.). Mng. Dir. F. Matsuo. Fishing by trawlers
in Yellow Sea, China, Formosa, Kyushu and Korean Waters.

Source: The Orient Yearbook, 1942.

APPENDIX E

INDUSTRIES RELATED TO FISHING WHICH WILL BE CRITICAL DURING PERIOD
OF MILITARY GOVERNMENT

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INDUSTRIES RELATED TO FISHING WHICH WILL BE CRITICAL DURING PERIOD OF MILITARY GOVERNMENT

Fish Net Manufacture

Fish netting will be one of the basic needs in rehabilitating the Japanese fisheries. During the war period there has been a scarcity of nets, but with the revival of textile production Japan can provide all of its needs of this item. A controlling factor will be the supply of raw materials, particularly cotton.

The largest part of the netting used for fish nets in prewar years was made by factories centered in Mie Prefecture. The chief fish net manufacturing companies in the order of their size are believed to have been: 1/

1. J. Yamamoto Fishing Net Manufacturing Company.
Kuwana, Mie Prefecture.
Branch office in Nagoya.
2. Hirata Fishing Net Manufacturing Company
Tomisuhara, Ise (Mie Prefecture)
3. Mie Net Manufacturing Company (Miye Seimo Gosh Kaisha)
Yokkaichi (Mie Prefecture)
4. Amikan Fishing Net Manufacturing Company
Tomida, Ise (Mie Prefecture)
This company manufactured fishing nets and twine, Manila rope and twine, etc.
5. Ondo Fishing Net Manufacturing Company
Ondo-Machi, Hiroshima Prefecture

1/ "Report on the Japanese Fish Net Industry," Department of Justice, January 18, 1943.

6. Naigai Fishing Net Manufacturing Company
Tsu, Mie Prefecture
7. Ohno Fish Net Manufacturing Company
Tomida, Mie Prefecture
8. Amita Shoten Net Manufacturing Company
Sasajima, Nagoya

The last three companies may not have had their own factories but contracted with other companies to manufacture for them. Fish nets were also manufactured in the city of Kanagawa, Ishikawa Prefecture. In addition to those manufactured in factories some nets, although in what quantities it is not known, were made in the small-scale "cottage" industries characteristic of Japan. It is possible that this production may have accounted for a considerable proportion of the netting used in the coastal fisheries.

Materials used in Japanese net manufacture included cotton, linen, silk, ramie, Manila hemp and hemp. The trap or pound nets were of the heavy materials whereas the finer nets such as gill nets were made of cotton or linen or a mixture of these two fibers.

Repair of Fishing Boats

The Nation-Wide Factory Guide of Japan, a translation of parts of Zenkoku Kojo Tsuran published in 1939, lists more than 600 firms which were at that time engaged in shipbuilding and ship repairs. Of these the ones listed in Table 1 were designated as building and/or repairing fishing vessels. Numerous other firms undoubtedly also built and repaired fishing vessels although their main work was on other types of

TABLE 1

Firms Building and/or Repairing Fishing Vessels

<u>Name</u>	<u>Address</u>	<u>Date of Founding</u>	<u>Chief Product</u>
<u>Yamaguchi Prefecture</u>			
K. K. Hayashi Ken Shoten Hikojima Takkosho	Oaza 1 of 4322 Hikojima Oi-machi, Shimonoseki Shi	1919	Steel whaling ships
<u>Osaka Fu, Osaka</u>			
Ikeda Zosensho	89 of 1 Nambajima-cho, Taisho-ku	1900	New-motored fishing ships
<u>Hyogo Prefecture-Kobe</u>			
Otani Zosensho	874 Iwaya-cho, Tsunagun	1912	Fishing boats
Otada Zosensho	14 of 978 Iwaya-cho, Tsunagun	1845	Fishing boats
<u>Wakayama Prefecture</u>			
Ishigaki Zosen Kojo	Oaza 795 Nishi Mukai, Nishi Mukai-machi, Higashi Muro-gun	1926	Fishing boats
<u>Mie Prefecture</u>			
Nishii Zosensho	625 Ominato-cho, Watarai-gun	1929	Fishing boats
Yoshinaga Zosensho	668 Ominato-cho, Watarai-gun	1935	Fishing ships
Nakai Zosensho	Jinja-cho, Watarai-gun	1897	Western style fishing boats
Izumi Zosensho	Oaza 1 of 618 Hikimotoura, Hikimoto-machi, Kita Muro-gun	1914	Fishing boats
Inove Zosensho	Oaza 1787 Hamashima, Hamashima-cho, Shima-gun	Horeki Period	Fishing vessels

TABLE 1 (Continued)

Firms Building and/or Repairing Fishing Vessels

<u>Name</u>	<u>Address</u>	<u>Date of Founding</u>	<u>Chief Product</u>
<u>Chiba Prefecture</u>			
Mori Zosensho	Oaza 2615 Uchiura, Kominato-machi, Awa-gun	1880	Fishing vessels
<u>Ibaki Prefecture</u>			
Sekino Tekkosho	Oaza 240 Daitoku, Omiya-mura Inashiki-gun	1920	Seaweed cutting ship
<u>Shizuoka Prefecture</u>			
Goshi Kaisha Koyanogi Zosen Bunkojo	500 Miho, Shimizu Shi	1926	Fishing vessels
Miura Zosensho	190 Miho, Shimizu Shi	1915	Seal fishing boats
Tsukama Seizosho	496 Miho, Shimizu Shi	1921	Fishing vessels
<u>Toyama Prefecture</u>			
K.K. Saga Zosen Tekkosho	1207 Rokutojo, Shinminato- machi, Imizu-gun	1916	Fishing vessels
<u>Miyagi Prefecture</u>			
Komatsu Zosensho	58 Goshoura, Ishimaki Shi	1889	Fishing repairs
<u>Iwate Prefecture</u>			
Kikuchi Zosensho	Dai Jusan Chievori, Oriniasamura, Shimo Hei-gun	1936	Fishing vessels
<u>Okayama Prefecture</u>			
Nakamoto Zosensho	Wake-gun	Unknown	Fishing vessels
Isomoto Zosensho	Wake-gun	Unknown	Fishing vessels

TABLE 1 (Continued)

Firms Building and/or Repairing Fishing Vessels

<u>Name</u>	<u>Address</u>	<u>Date of Founding</u>	<u>Chief Product</u>
<u>Tottori Prefecture</u>			
Ishiguro Zosensho	1053 Karo-cho, Tottori Shi	1878	Wooden fishing vessels
Ishiguro Zosensho Yonago Kojo	25 of 1 Gion-cho, Yonago Shi	1936	Wooden fishing vessels
Kobayashi Zosen Kogo	1110 Ohama-mura, Nima-gun	1781	Fishing vessels
<u>Tokushima Prefecture</u>			
Kuroe Dock Zosensho	Asakawara, Asakawa-mura, Kaibu-gun	1922	Fishing vessels
<u>Kochi Prefecture</u>			
Yamaji Zosensho	Nagahama-cho Agawa-gun	1897	Fishing vessels
<u>Nagasaki Prefecture</u>			
K. K. Itsutsu Kyodai Zosensho	323 of 3 To-machi, Nagasaki Shi	1927	Fishing vessels
Mukai Zosensho	307 of 3 To-machi, Nagasaki Shi	1926	Fishing vessels
Higuchi Zosensho	214 of 3 To-machi, Nagasaki Shi	1924	Fishing vessels
Yashima Zosensho	Oaza Sasuna, Sasuna- mura, Kami Agata-gun	1919	Small fishing vessels
<u>Oita Prefecture</u>			
Kamei Zosensho	Kataura, Tsukumi-machi, Kita Amabe-gun	1912	Fishing Steamers
Kamei Zosensho	47 Usuki, Usuki-machi, Kita Amabe-gun	1912	Fishing Steamers

TABLE 1 (Continued)

Firms Building and/or Repairing Fishing Vessels

<u>Name</u>	<u>Address</u>	<u>Date of Founding</u>	<u>Chief Product</u>
<u>Miyazaki Prefecture</u>			
Takahashi Zosensho	Oasa Hirano, Aburatsu, Minami Naka-gun	1931	Miscellaneous fishing vessels
<u>Hokkaido</u>			
Shinzo Zosensho	36 Tsuruoka-cho, Hakodate Shi	1926	Fishing vessels
Hori Zosensho	45 Kobune-cho, Hakodate Shi	1914	Fishing vessels
Kanena Suzuki Zosensho	2 Hokage-cho, Hakodate Shi	1930	Fishing vessels
Takigawa Zosensho	196 Ukaura-cho, Hakodate Shi	1897	Fishing vessels
Matsumoto Zosensho	36 Tsuruoka-cho, Hakodate Shi	1923	Fishing vessels
Asai Zosensho	144 Sumiyoshi-cho, Hakodate Shi	1934	Fishing vessels
Saga Zosensho	136 Kanahori-cho, Hakodate Shi	1897	Fishing vessels
Hiraishi Zosensho	43 Yamase Tomari-cho, Hakodate Shi	1928	Fishing vessels
Tsuji Tekkosho	Oazu Watsukanai, Watsukanai-machi, Soya-gun	1923	Fishing vessels
Sasmaki Zosensho	Aza Minato, Kameda-mura, Kameda-gun	1903	Fishing vessels

Source: "Nation-Wide Factory Guide of Japan," FEA Special Areas Branch, February 1944.

Note:Place terms in above addresses

<u>Japanese</u>	<u>English</u>
gun	county
shi	city
mura	township or village
ku	city ward
dori	street
cho (or) machi	subdivision of a ward, town, or village, and not necessarily a single street.
chome	a further subdivision or "block" within a "cho" or "machi"
Aza or Oaza	section (no exact English equivalent)

vessels; pages 805 - 833 of the source lists the names and addresses of these other firms.

Small boats used in the coastal fisheries can in many cases be repaired locally. Fishing villages, particularly the larger ones, have their own works for engine repair. The Japanese fisherman is a capable engineer in the sense that he can repair, disassemble and reassemble the engine on his particular boat. This, of course, is not true of the more complicated Diesel engines.

Salt Production 2/

In the processing of fish for domestic consumption salt will be the single most critical item. Before the war Japan was the largest salt importing country of the world, importing during the period 1935 - 1939 about 1.3 million metric tons. 3/ Domestic production averaged about 600,000 tons annually. Since January 1942 salt for home consumption has been rationed.

The apparent consumption of salt in Japan proper was about 1.9 million tons per year in the prewar period; of this approximately 800,000 - 850,000 tons were required for household consumption and the food industries. The amount used for the salting of fish was 53,000 metric tons in 1937 and 57,000 tons in 1938. Much larger amounts of salt were consumed in the chemical industries -- 1.4 million tons in 1938.

2/ This section is largely based upon the report prepared by the U. S. Tariff Commission, "Japanese Trade Studies, Special Industry Analysis No. 20 -- Salt," June 1945.

3/ About one-third of prewar imports were from Formosa, Manchuria and Kwantung and one-sixth from China.

The salt industry has been under monopolistic control of the Japanese government since 1905. Only persons licensed by the government could produce or import salt and all domestically produced salt was sold by the Japanese government. Salt intended for use in the salting of fish, as well as that for other industries, received individual treatment under the law and was sold at a special reduced price.

During the period of Military Government control, essential civilian consumption of salt, i.e. in home consumption and food industries, should receive first priority and in such allocations the salting of fish should receive its due share.

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Only the major sources used in the preparation of this report are listed. In addition numerous confidential sources were consulted, including consular reports, I. D. C. abstracts, F. C. C. broadcast summaries, interview of repatriates and documents prepared by the War Department, the Navy Department and various other government agencies. Also items and brief articles in several periodicals, both those published in United States or Japan, were used; among these periodicals were Far Eastern Survey, Fishery Market News, Pacific Fisherman, Fish Trade Gazette, Oriental Economist, Journal of Imperial Fisheries, and Japan Weekly Chronicle.

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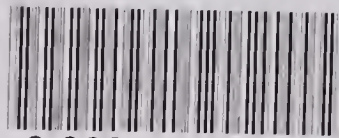


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